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FINAL BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 14 NTC ORLANDO FL

7/1/1996

ABB ENVIRONMENTAL

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE-SCREENING REPORT

000460

STUDY AREA 14

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Unit Identification Code: N65928

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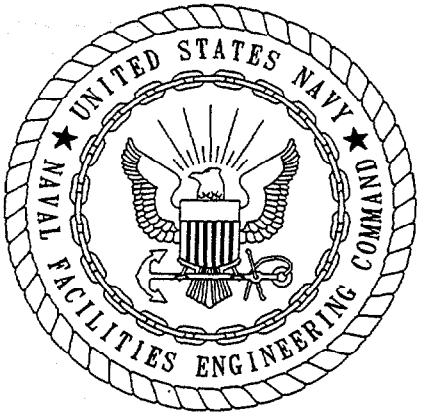
July 1996



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: July 17, 1996

NAME AND TITLE OF CERTIFYING OFFICIAL: John Kaiser
Task Order Manager

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Project Technical Lead

(DFAR 252.227-7036)

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
BRAC	Base Realignment and Closure
CLP	Contract Laboratory program
DQO	data quality objective
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
GC	gas chromatograph
GPR	ground-penetrating radar
MCL	maximum contaminant level
µg/ℓ	micrograms per liter
µg/kg	micrograms per kilogram
OPT	Orlando Partnering Team
OU	operable unit
PAH	polynuclear aromatic hydrocarbons
PCE	tetrachloroethene
ppm	parts per million
RBC	risk-based concentration
SCG	soil cleanup goal
TAL	target analyte list
TCE	trichloroethene
TCL	target compound list
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 STUDY AREA 14: DISPOSAL, SALVAGE, AND SCRAP BUILDING, AREA C, BUILDING 1102

This report contains information gathered as a result of site-screening activities conducted at Study Area 14. In the fall of 1995, after the review of site-screening results, the Orlando Partnering Team (OPT) assigned the contiguous Study Areas 12, 13, and 14 to operable unit status as Operable Unit (OU) 4. The results of subsequent investigations are not included in this document but may be found in the appropriate OU 4 reports as they become available.

1.1 STUDY AREA 14, BACKGROUND AND CONDITIONS. Study Area 14 includes Building 1102 and the surrounding paved and grassed areas. The facility is located off Marvin Shields Avenue in the northwest portion of Area C (Figure 1). The facilities are used for indoor and outdoor storage of salvageable equipment and materials in support of Defense Reutilization and Marketing Office operations. The facility includes a rectangular, one-story corrugated steel building (3,840 square feet) constructed on a concrete slab with a gabled roof. The surrounding salvage yard is currently asphalt paved (Figure 2). The building was originally constructed in 1969. Prior to that time, the area between the base laundry (to the northwest) and the current structure was used as a scrap-and-salvage yard. Equipment and materials currently stored at this location include office furniture, mattresses, refrigerators, and drycleaning equipment.

A documented release of 3 gallons of tetrachloroethene (PCE) from scrap drycleaning equipment occurred in 1989. Remediation included the removal and disposal of approximately 20 drums of contaminated soil and asphalt. However, the exact location of the release was not indicated (ABB Environmental Services, Inc. [ABB-ES], 1994). Environmental concerns in this study area include confirmation of the adequacy of the removal action, as well as the potential impact from undocumented releases of oil or hazardous materials in the scrap yard.

1.2 STUDY AREA 14, BUILDING 1102 INVESTIGATIVE SUMMARY. The objective of the screening activity in this area is to determine what chemical contamination, if any, remains following remediation of a PCE spill, as well as to evaluate the potential impact of past site use on environmental media.

1.2.1 Geophysical Surveys Geophysical surveys were conducted to evaluate subsurface scrap disposal and to aid in clearing utilities for the subsurface investigation. An initial vertical gradiometer (magnetometer) survey was completed in the paved and grassed areas of the salvage yard. Measurements were recorded on 10-foot-grid centers. As anticipated, magnetic interference from sources including chainlink fences, vehicles, heavy equipment, and power lines severely limited the effectiveness of the technique for assessing surface debris disposal. A confirmatory ground-penetrating radar (GPR) survey was completed in the same area to confirm anomalies identified by the magnetometer. GPR traverses were made in both east-west and north-south directions. The spacing between individual traverses was nominally 10 feet, although this spacing was increased in portions of the site where access was restricted due to stockpiled materials. The magnetometer and GPR surveys did not define any disposal areas,

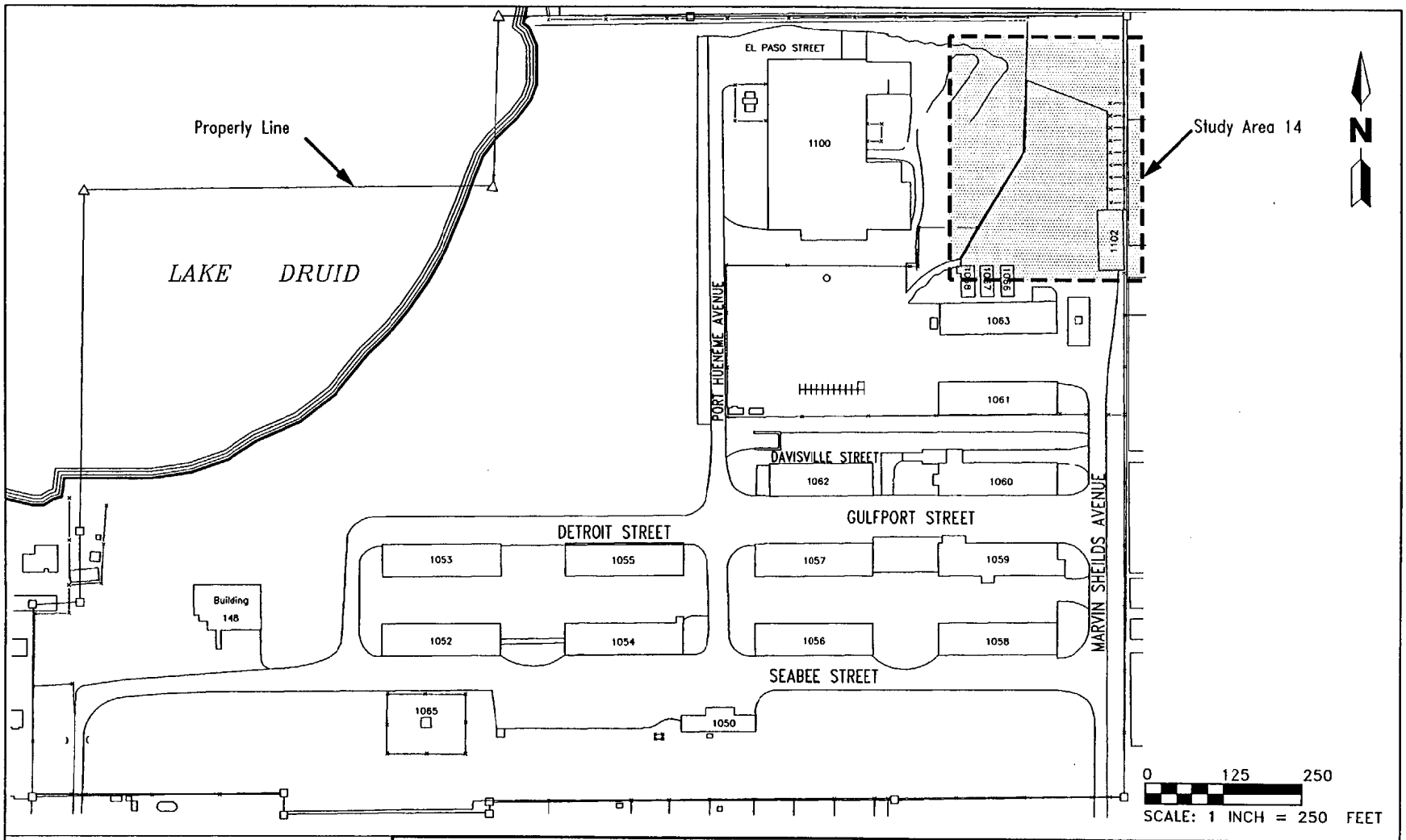

FIGURE 1
LOCATION OF STUDY AREA 14
AREA C

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which would require additional investigation, but were useful in clearing utilities. Geophysical survey results are presented in Appendix A.

1.2.2 Passive Soil Gas Survey A passive soil gas survey was conducted at Study Area 14 to identify areas with elevated concentrations of volatile organic compounds (VOCs) from past or current waste-handling practices. The soil gas survey was conducted concurrently with the adjacent Study Area 13. Twenty-eight passive soil gas collectors were installed at a depth of 3 feet below land surface (bls) with locations established on a 50-foot sampling grid. The locations of some soil gas collectors were offset to avoid structures and underground utilities in the area. The soil gas sample locations are shown on Figure 1, Appendix B. Soil gas samples were analyzed on a gas chromatograph (GC) equipped with an electron capture detector for halogenated hydrocarbons and a GC/flame ionization detector (FID) for petroleum hydrocarbons.

Soil gas data are always semiqualitative, as multiple sources in soil and/or groundwater cannot be differentiated. Further, compound concentrations in each collector are compared on a relative basis, depending on whether or not the data are interpreted to be of high, moderate to high, moderate, etc., intensity. These qualitative soil gas values do not represent actual concentrations of the reported compounds. Efforts to relate soil gas response directly to groundwater or soil contaminant concentrations is generally not regarded as productive owing to the assumptions that are required for heterogeneity and source distribution.

PCE was detected at 1.9 micrograms per liter ($\mu g/\ell$) in the vicinity of monitoring well OLD-14-02, approximately 30 feet northwest of the northwest corner of Building 1102. No other chlorinated solvents or petroleum-related hydrocarbons were detected in the soil gas survey at Study Area 14. Soil gas survey results are summarized in Appendix B.

1.2.3 Soil Boring Investigation A shallow soil boring investigation was conducted for screening purposes at Study Area 14 (and the adjacent Study Area 13) to assist in selection of locations for confirmatory sampling. A total of 71 hand-auger explorations was made. Of these, 11 were temporary piezometers, 12 were made for sampling soils at depths of 1 to 2 feet bls and 8 to 10 feet bls in the vicinity of future soil borings, and the remainder were completed in areas of elevated soil gas detections, in areas where documented spills had taken place, and where historical records indicated activity of potential concern. Soil samples from the hand-augered borings were screened for VOCs using an FID. Readings were taken from soil cuttings at least every foot while boring. Areas of high FID readings, ranging from 50 parts per million (ppm) to 2,200 ppm at 3 to 6 feet bls, were recorded at Study Area 13 west of soil boring 14B001 (Figure 2).

Four soil borings, 14B001, 14B002, 14B003, and 14B004 (corresponding to monitoring wells OLD-14-01A through OLD-14-04A), were advanced with hollow-stem auger to depths ranging from 14 to 16 feet bls. Soil boring 14B001, along the northern boundary of Study Area 14, was placed in the area of high FID readings documented during the hand-auger boring investigation discussed above. The remaining borings were positioned in areas of historical activity visible on aerial photographs. Soil samples were collected continuously with a split-spoon sampler and field screened with an FID. No responses above background were observed during FID screening, with the exception of samples from 4 feet bls and 5 feet bls from boring 14B004. Surface and subsurface soil samples were

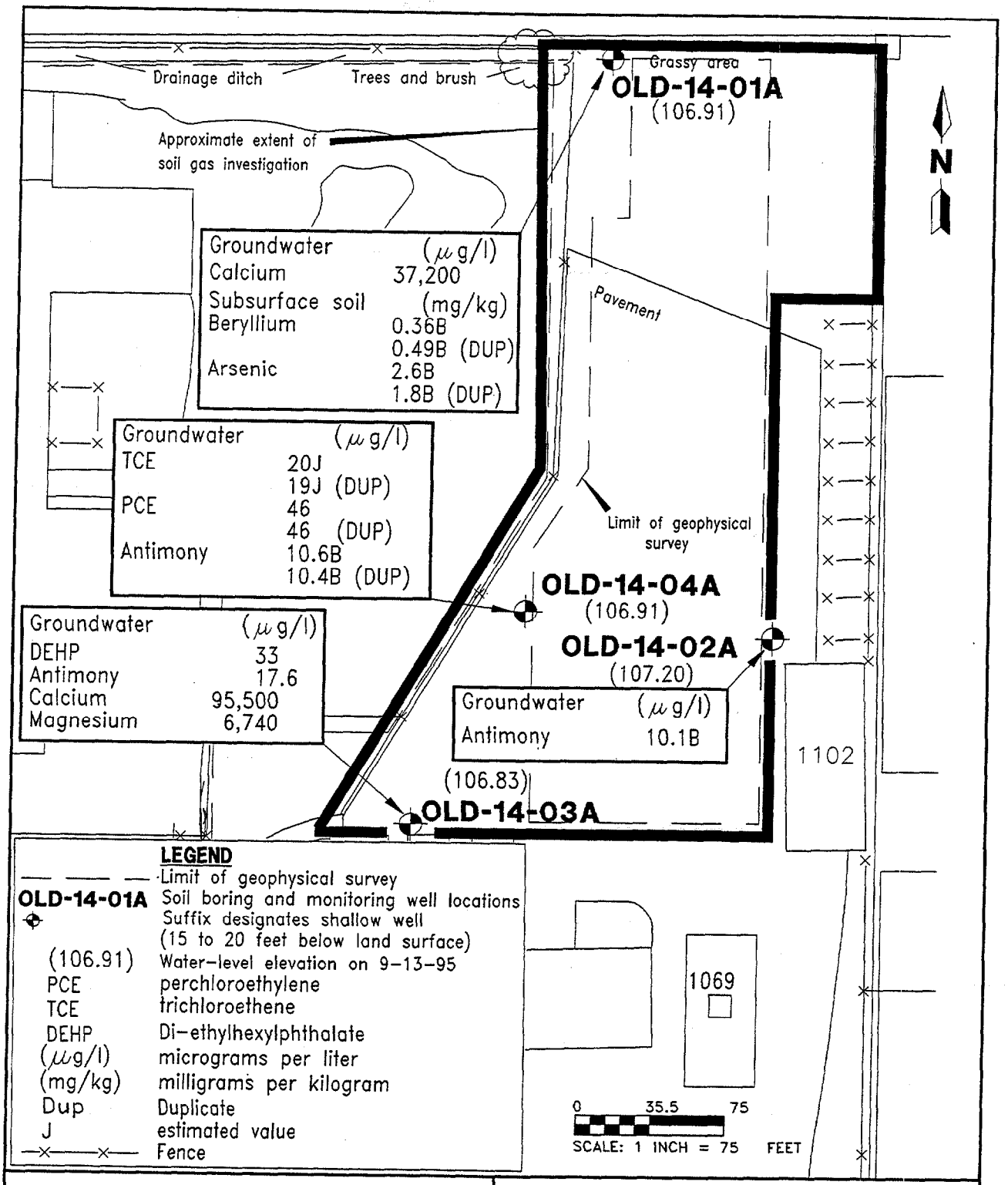

FIGURE 2
SOIL BORING AND MONITORING WELL, SOIL GAS AND GEOPHYSICAL SURVEY LOCATIONS, BUILDING 1102, DISPOSAL, SALVAGE AND SCRAP BUILDING, AREA C, STUDY AREA 14

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collected at each soil boring location, including one subsurface sample duplicate from boring 14B001. Surface soil sampling was conducted at intervals of 0 to 1 foot bls in grassed areas (14B001) and 1 to 2 feet bls in paved areas (14B002, 14B003, 14B004). Subsurface soil samples were collected from the interval immediately above the water table. Soil samples were submitted for total petroleum hydrocarbons (TPH) and full suite Contract Laboratory Program (CLP) target compound list (TCL) and target analyte list (TAL) laboratory analyses, in accordance with U.S. Environmental Protection Agency (USEPA) Level IV data quality objectives (DQOs). Boring logs are presented in Appendix C.

1.2.4 Groundwater Monitoring Well Installation and Sampling Each soil boring was completed as a monitoring well with well screens installed to intercept the water table at 5 feet to 15 feet bls. One groundwater sample was collected from each of the four monitoring wells, including a sample duplicate from OLD-14-04A. Groundwater samples were submitted for TPH, total suspended solids and full suite CLP TCL and TAL analyses, in accordance with USEPA Level IV DQOs. Groundwater monitoring well diagrams are presented in Appendix C.

1.3 STUDY AREA 14, BUILDING 1102 RESULTS.

1.3.1 Soil and Groundwater Analytical Results A summary of positive detections in surface soil, subsurface soil, and groundwater analytical results is presented in Appendix D. A complete set of soil and groundwater analytical results is presented in Appendix E.

1.3.1.1 **Surface Soil and Subsurface Soil Analytical Results** Analytical results for surface and subsurface soil samples collected in this study area indicate low levels of organic contaminants consisting primarily of PCE, acetone, polynuclear aromatic hydrocarbons (PAHs), and pesticides. None of these compounds were detected at concentrations above the corresponding surface soil or leachability-based soil cleanup groups (SCGs) or risk-based concentrations (RBCs). Leachability-based SCGs apply only to PCE. PCE was the only organic constituent present in soil and also present in groundwater above Florida Department of Environmental Protection (FDEP) groundwater guidance concentrations.

PCE was detected at 11 micrograms per kilogram (μg/kg) in surface soil sample 14B00201, corresponding to the location of the soil gas survey hit and at concentrations up to 2 μg/kg in surface and subsurface soil from boring 14B004. These detections may be from residual PCE left behind following the removal of contaminated soil from the small documented PCE spill at Study Area 14. Acetone was detected in three subsurface soil samples, but was not detected in the corresponding surface soil samples. The lack of source area and the random distribution for this compound suggest it may be related to laboratory or sampling contamination.

PAHs ranging from 100 μg/kg to 230 μg/kg were detected in surface soil sample 14B00101 and in subsurface soil sample 14B00302 (6 feet bls). Elevated concentrations of TPH were detected in surface soil sample 14B00102 (10 feet bls) and the sample duplicate. Pesticides, including 4,4'-dichlorodiphenyldichloroethane, 4,4'-dichlorodiphenyldichloroethene, 4,4'-dichlorodiphenyltrichloroethane, alpha-Benzenehexachloride, alpha-Chlordane, and gamma-Chlordane, were detected in surface and subsurface soil samples at concentrations up to 100 μg/kg. The detection of PAHs, TPH, and pesticides in soil can most likely be

attributed to past storage of hazardous materials and scrap equipment at Study Area 14.

Inorganic analytes that were detected above background concentrations in soil samples include cadmium, chromium, copper, lead, manganese, nickel, and zinc in surface soil samples and arsenic, barium, beryllium, chromium, copper, iron, magnesium, manganese, mercury, nickel, potassium, vanadium, and zinc in subsurface soil. All of the analytes which exceeded the background concentrations in surface soil and the majority of exceedances in subsurface soil samples were from soil boring 14B001, associated with monitoring well OLD-14-01 located along the northern boundary of Study Area 14. However, with the exception of arsenic and beryllium, all analytes were at concentrations less than the applicable SCGs (surface soil) and corresponding residential RBCs. Arsenic and beryllium were detected in subsurface soil sample 14B00102 and the field duplicate at concentrations in excess of the residential RBCs for carcinogenic effects. Arsenic was also detected in the surface soil sample from this location and from boring 14B004 above the corresponding SCG and residential RBCs for arsenic as a carcinogen.

1.3.1.2 **Groundwater Analytical Results** Analytical results for groundwater samples indicate PCE and trichloroethene (TCE) contamination in sample 14G00401 and the field duplicate 14G00401D. PCE was detected at 46 $\mu g/\ell$ in both samples, and TCE at 20 $\mu g/\ell$ and 19 $\mu g/\ell$, respectively. PCE was also detected in surface and subsurface soil samples collected from the corresponding soil boring 14B004. The concentration of PCE and TCE in groundwater from monitoring well OLD-14-04 exceeds the FDEP groundwater primary standard of 3 $\mu g/\ell$ and the Federal maximum contaminant level (MCL) of 5$\mu g/\ell$ for both compounds. PCE was also detected in groundwater from monitoring well OLD-14-02 (1.4 $\mu g/\ell$) at a concentration below the FDEP groundwater guidance and Federal MCLs. Chloroform, methylene chloride, bis(2-ethylhexyl)phthalate, and dimethylphthalate were also detected at low concentrations in groundwater, but at concentrations below FDEP groundwater guidance and Federal MCLs. The detection of phthalate compounds can likely be attributed to laboratory or sampling contamination.

Groundwater elevation contours for water levels measured on September 13, 1995, in monitoring wells at Study Area 14, and adjacent Study Areas 12 and 13, are shown on Figure 3. The results show a westerly groundwater flow indicating that Study Area 14 is upgradient of PCE sources at Study Area 13. Groundwater elevations at Study Area 13 are shown for surficial wells screened in the upper portion of the shallow aquifer. However, water levels measured in the deep wells screened at the base of the surficial aquifer show a similar westerly groundwater flow.

Inorganic analytes detected in groundwater at concentrations above background screening levels include antimony, beryllium, calcium, magnesium, silver, sodium, and zinc. However, with the exception of antimony, none were detected above FDEP groundwater guidance concentrations or tap water RBCs. Concentrations of antimony in groundwater from wells OLD-14-02, OLD-14-03, and OLD-14-04 ranged from 10.1B to 17.6B $\mu g/\ell$, exceeding the FDEP groundwater primary standard and Federal MCL of 6 $\mu g/\ell$.

1.4 STUDY AREA 14, BUILDING 1102 CONCLUSIONS. Contaminants detected in soil samples at Study Area 14 include low concentrations of PAHs, TPH, and pesticides

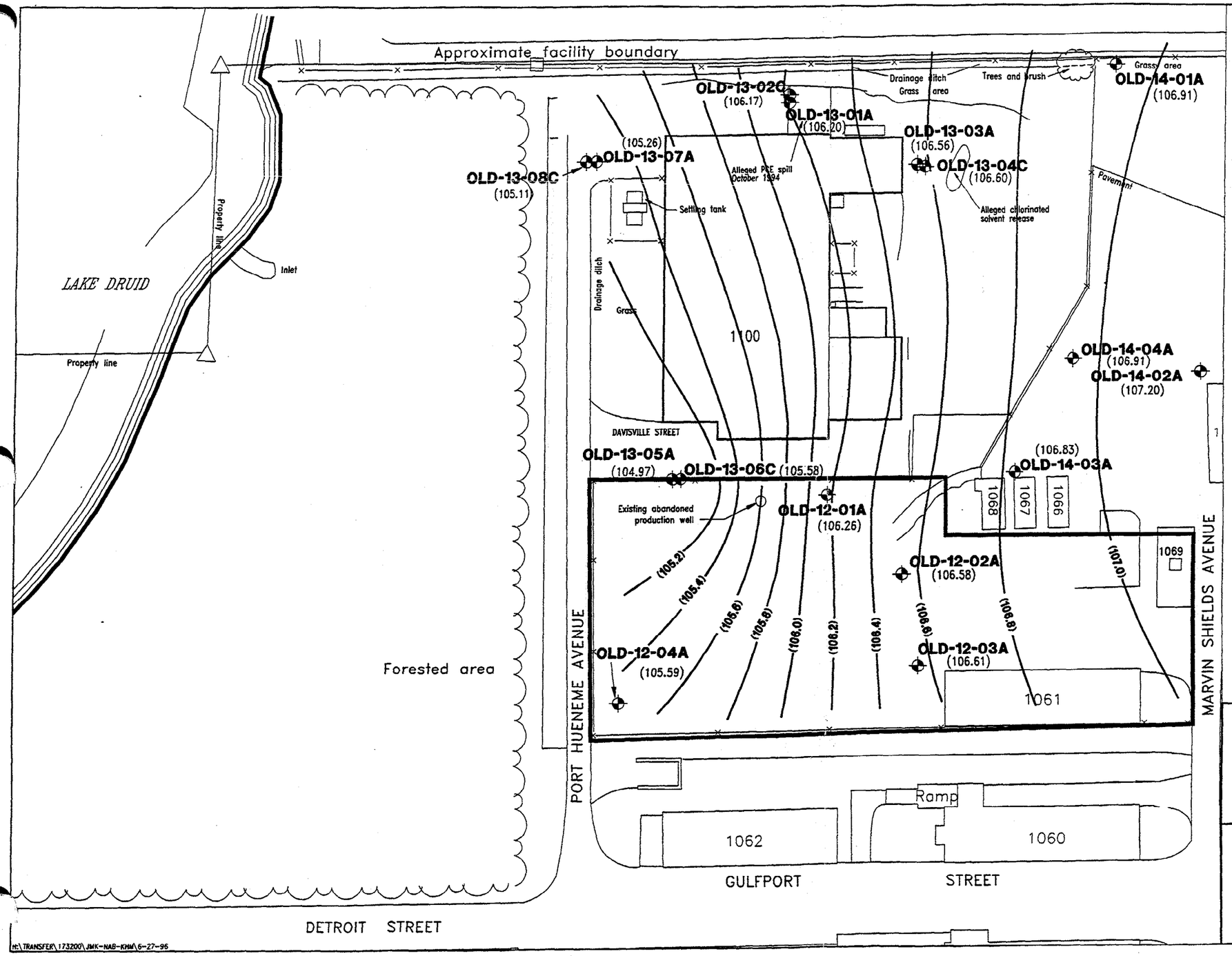

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FIGURE 3
SHALLOW GROUNDWATER ELEVATION CONTOURS, SEPTEMBER 13, 1995
AREA C STUDY AREAS 12, 13, AND 14

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reported in surface and subsurface soils primarily in the northwest (14B001) and southwest (14B003) corners of Study Area 14. Chlorinated solvents were detected in soil gas, surface and subsurface soils, and in the corresponding groundwater samples at locations in the central portion (OLD-14-02A and OLD-14-04A) of the study area. The levels of PCE and TCE in groundwater at these locations exceed the FDEP groundwater primary standard. These chlorinated solvents are likely associated with the documented release of PCE from the scrap drycleaning equipment in 1989.

Inorganic analytes detected at concentrations in excess of background screening values and regulatory guidance criteria include arsenic and beryllium in soil and antimony in groundwater. None of the other analytes detected appear to be a concern.

Based on the results of the passive soil gas program, analytical test results, and the past usage of hazardous materials on the site, ABB-ES has recommended further investigations of soil and groundwater contamination at Study Area 14. Horizontal and vertical delineation of groundwater contamination is necessary. Because Study Area 14 is upgradient of Study Area 13, the PCE and TCE in Study Area 14 may originate from a source such as the documented 1989 PCE spill rather than Study Area 13. An investigation into the source of antimony in groundwater and elevated concentrations of arsenic and beryllium in soil is also recommended.

As a result of these investigations, and following a review of the data, the OPT has transferred Study Area 14 to OU status, effective December 1, 1995. A focused field investigation as part of an Interim Remedial Action began in May 1996.

The undersigned members of the OPT concur with the findings of the preceding investigation.

STUDY AREA 14

Nancy Rodriguez	7/24/96
U.S. Environmental Protection Agency, Region IV	Date
Robert Mitchell	7/24/96
Florida Department of Environmental Protection	Date
Wayne J. Hansel	8-23-96
U.S. Department of the Navy	Date

REFERENCE

ABB Environmental Services, Inc., 1994, Final Draft Environmental Baseline Survey (EBS) Report, Naval Training Center, Orlando, Florida: prepared for Southern Division, Naval Facilities Engineering Command, Charleston, South Carolina.

APPENDIX A

GEOPHYSICAL SURVEYS

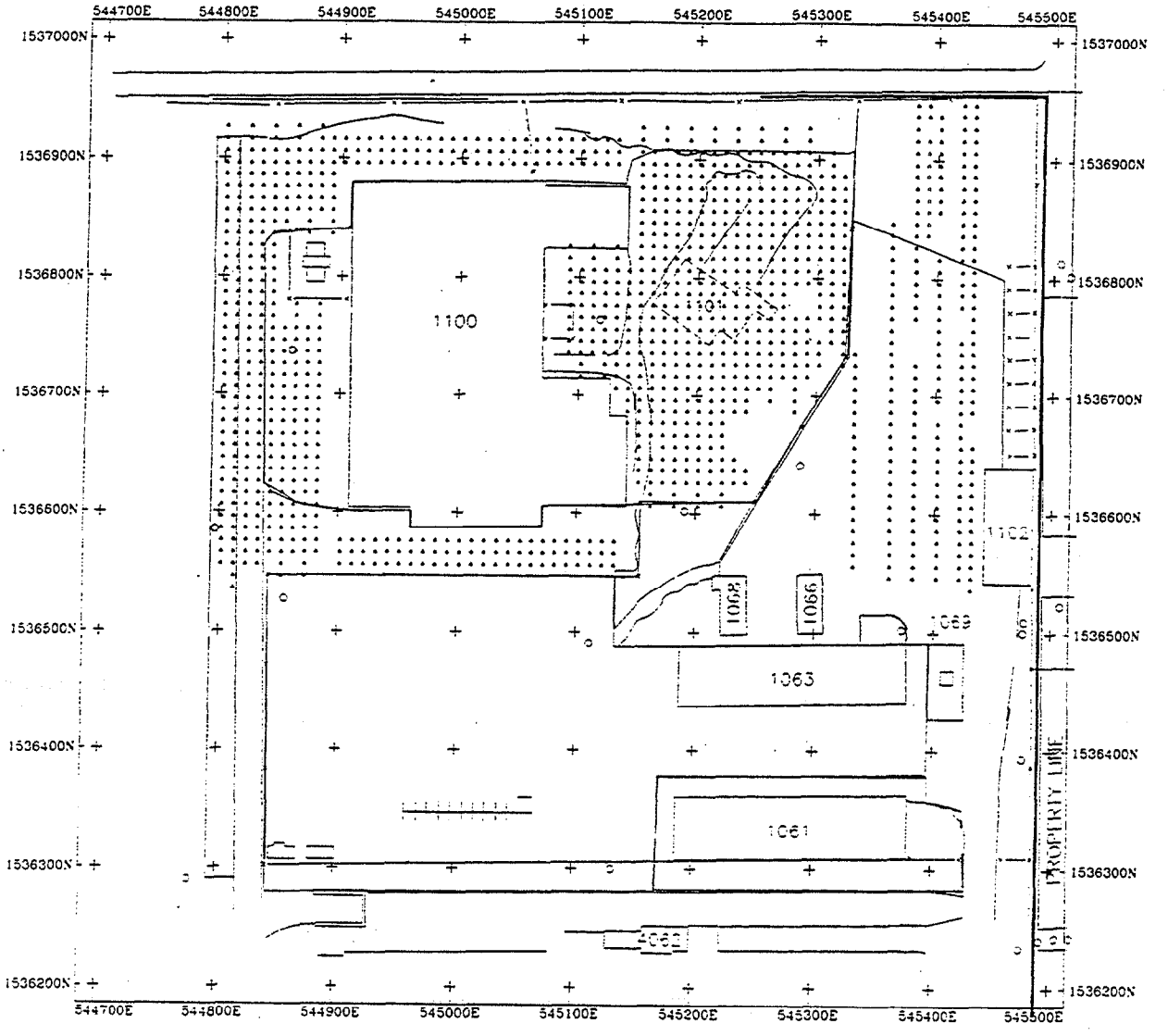
TECHNICAL MEMORANDUM
GEOPHYSICAL SURVEYS
STUDY AREA 14

The following is a summary of the significant findings of the geophysical surveys that took place between February 2 and February 13, 1995 at Naval Training Center, Orlando. Geophysical surveys took place at Study Area 14 (Defense Reutilization Management Office). Surveys also took place at Study Area 13 (Building 1100, Base Laundry), and the discussions below are combined for the two study areas because they are contiguous. The geophysical surveys were conducted to evaluate potential subsurface debris disposal and to aid in clearing utilities for the subsurface investigations. The techniques used were magnetometry and ground-penetrating radar (GPR).

The magnetic method is a versatile geophysical technique used for evaluating shallow geologic structures and for locating buried manmade objects and buried debris by measuring local distortions in the earth's magnetic field. These distortions are produced by magnetic objects (steel and other magnetic materials). The GPR technique uses high frequency radio waves to determine the presence of subsurface objects and structures. The radio wave energy is reflected from surfaces where there is a contrast in the electrical properties of subsurface materials, such as naturally occurring geologic horizons or manmade objects (e.g., buried utilities, tanks, drums). Typical applications for GPR include mapping buried utilities and delineating the boundaries of buried hazardous waste materials and abandoned landfills. A discussion of the results of this investigation follows.

Geophysical surveys at the Study Areas 13 and 14 included a magnetometer survey (with a 10-by-10-foot measurement grid), which was followed by a ground GPR. A total of 1,199 magnetic measurements were made during this study. No geophysical anomalies indicative of buried waste materials were observed, although a number of strong anomalies typical for roadways, buried utilities, chainlink fences, and in one case, the probable former site of a building were observed. Figure 1 shows the approximate location of the magnetometer grid completed at Study Areas 13 and 14, and Figure 2 presents the vertical gradient (magnetic) contours for the geophysical data.

The GPR study was completed along the traverses indicated on Figure 3. Figures 4 through 6 present typical recordings made during the study. The data are of good to excellent quality and were useful in guiding intrusive exploration activities (soil gas and monitoring well installation). Annotations have been made on GPR recordings to tentatively identify some of the features observed.



Scale 1 900

50 0 50 100 150

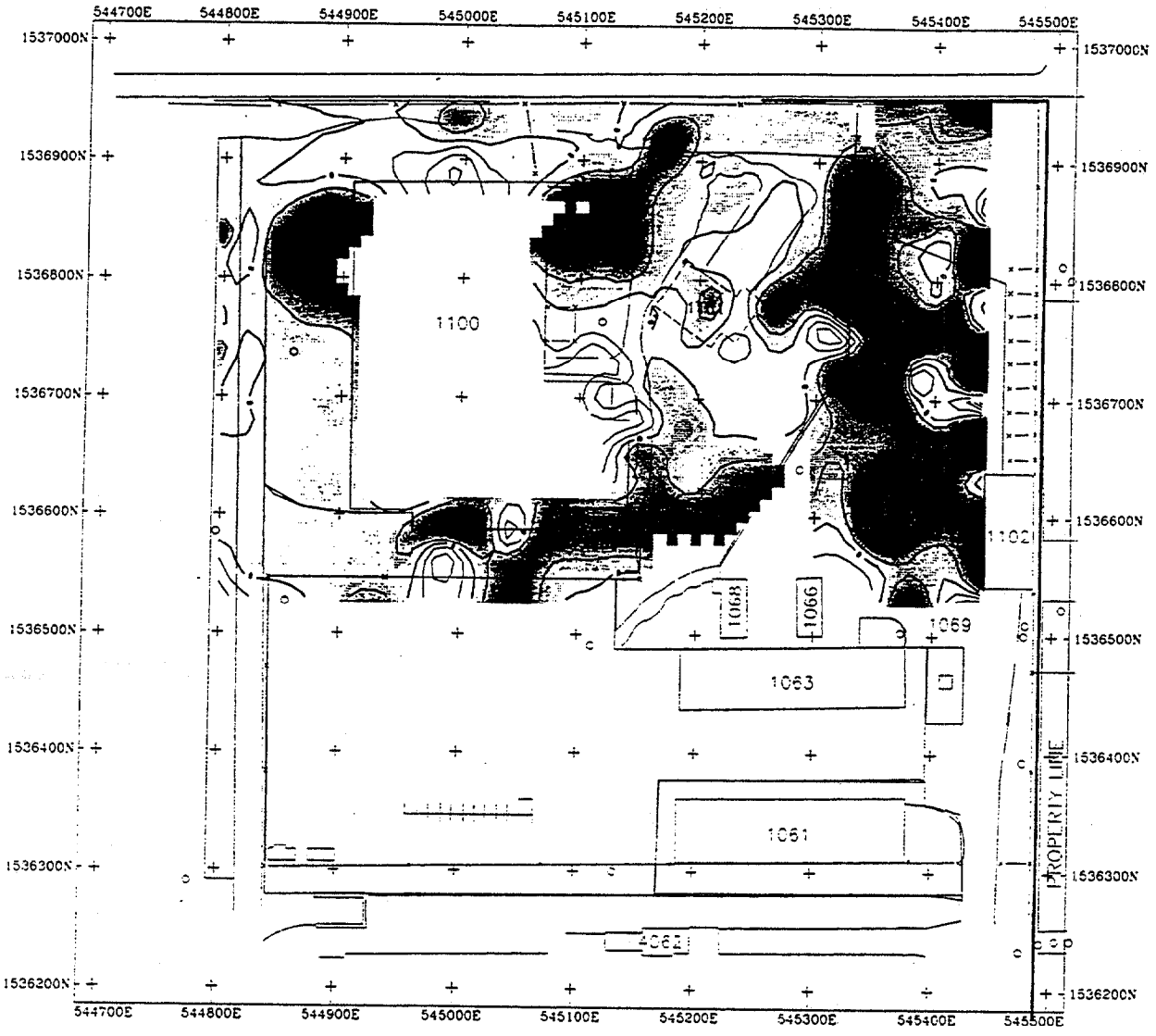
(feet)

FIGURE 1

SOUTHERN DIVISION

MAGNETOMETER STATION LOCATIONS
STUDY AREAS 13 AND 14
GROUP II STUDY AREAS

ABB ENVIRONMENTAL SERVICES, INC.



Scale 1:900

0 50 100 150

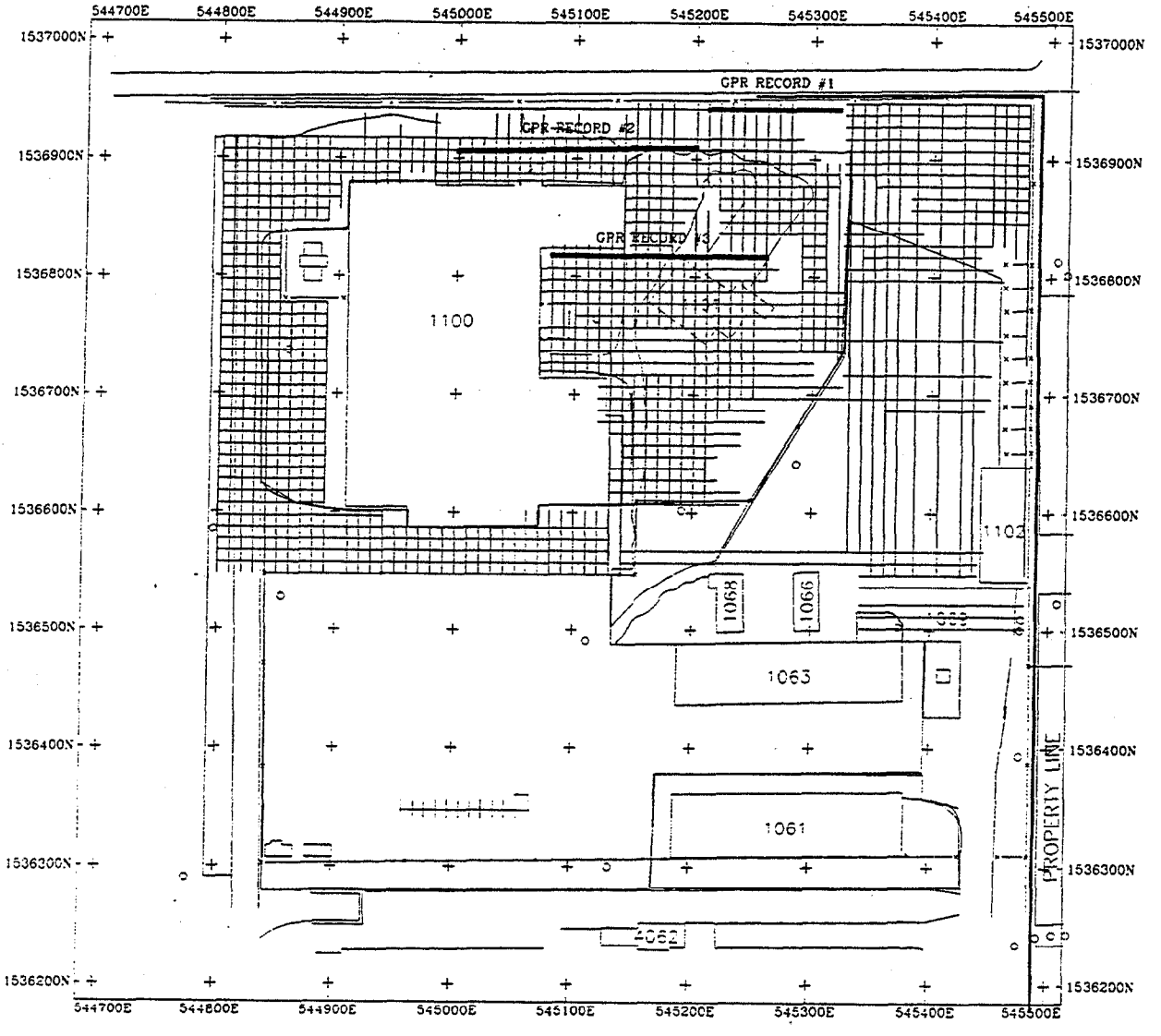
(feet)

FIGURE 2

SOUTHERN DIVISION

VERTICAL MAGNETIC GRADIENT CONTOURS
STUDY AREAS 13 AND 14
GROUP II STUDY AREAS

ABB ENVIRONMENTAL SERVICES, INC.



Scale 1 900

50 0 50 100 150

(feet)

FIGURE 3

SOUTHERN DIVISION
GROUND PENETRATING RADAR TRAVERSES STUDY AREAS 13 AND 14 GROUP II STUDY AREAS
ABB ENVIRONMENTAL SERVICES, INC.

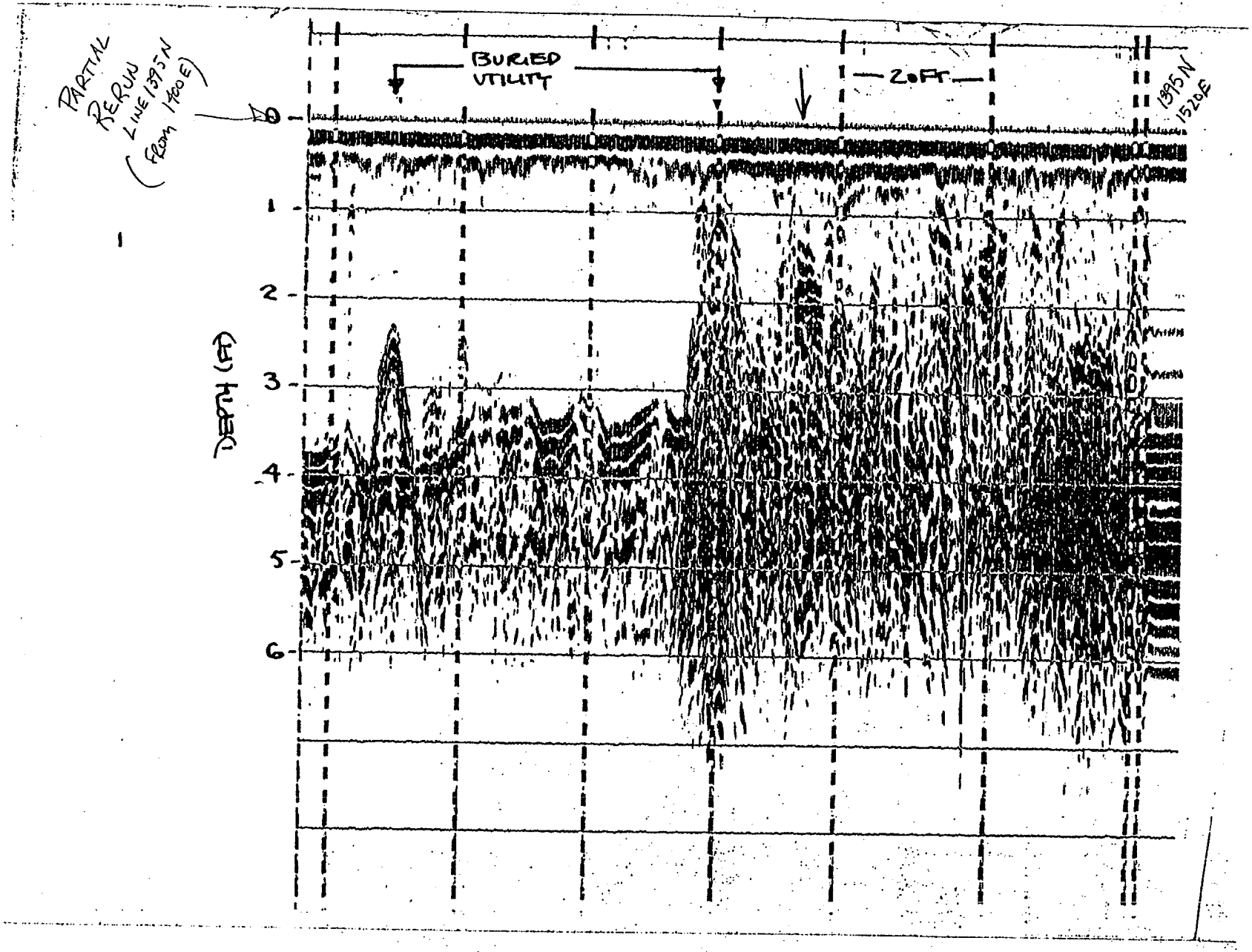


FIGURE 4

SOUTHERN DIVISION
TYPICAL GROUND PENETRATING RADAR RECORDING RECORD #1 STUDY AREAS 9 AND 14 GROUP II AREAS
ABB ENVIRONMENTAL SERVICES, INC.

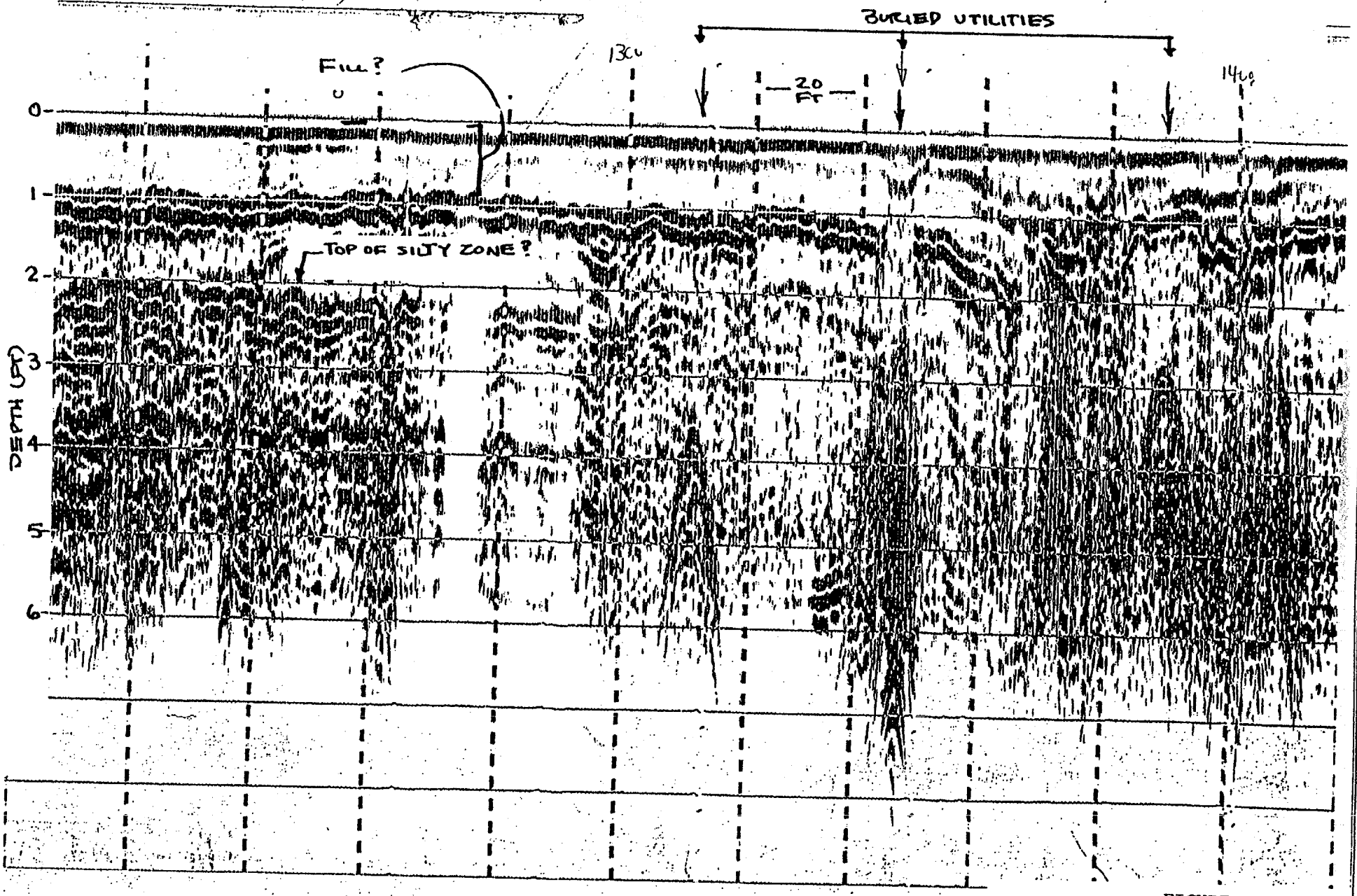


FIGURE 5

SOUTHERN DIVISION
TYPICAL GROUND PENETRATING RADAR RECORDING RECORD #2 STUDY AREAS 13 AND 14 GROUP II STUDY AREAS
ABB ENVIRONMENTAL SERVICES, INC.

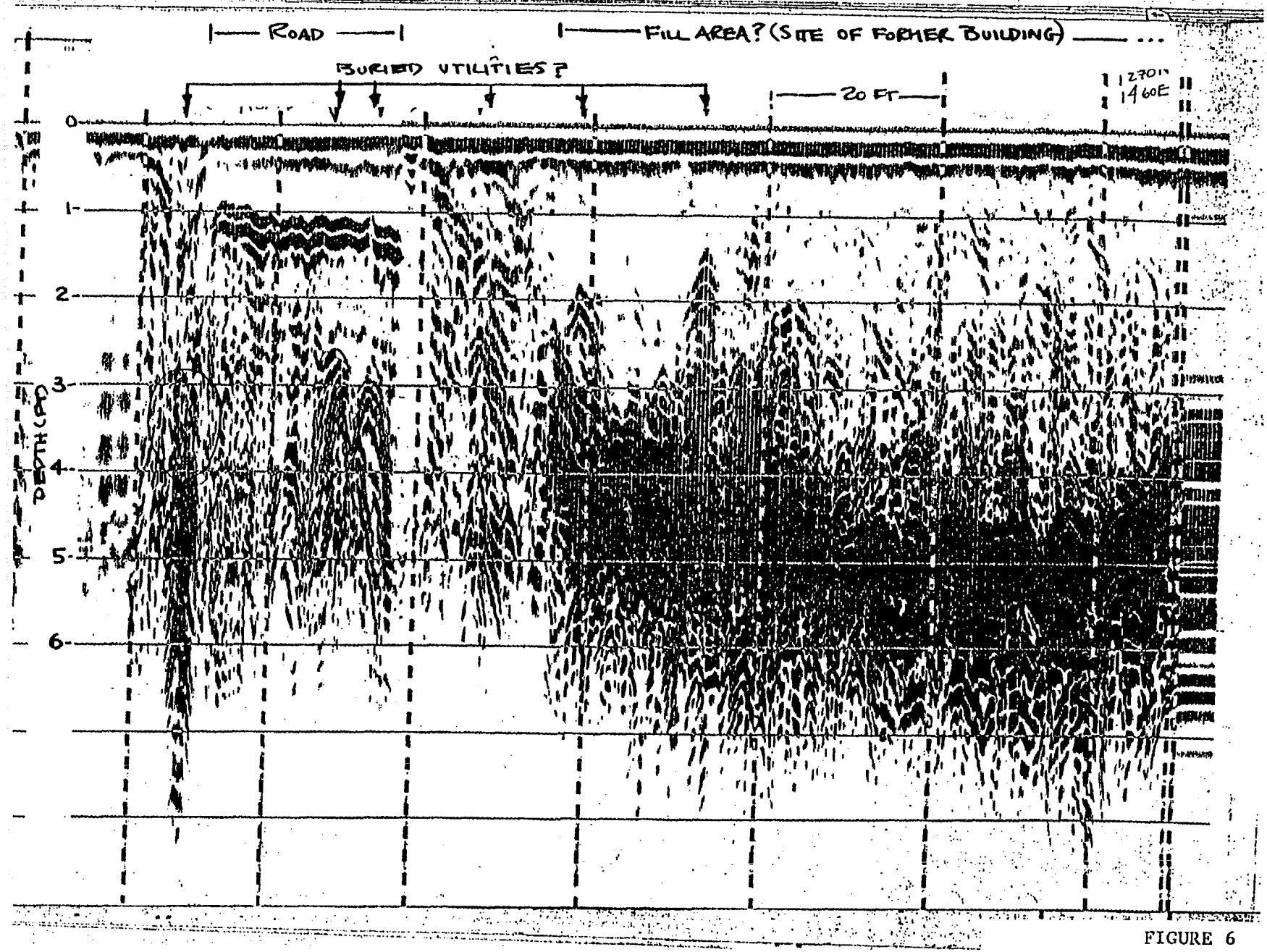


FIGURE 6

SOUTHERN DIVISION

TYPICAL GROUND PENETRATING RADAR RECORDING
RECORD #3
STUDY AREA AND 14
GROUP II AREAS

ABB ENVIRONMENTAL SERVICES, INC.

APPENDIX B

PASSIVE SOIL GAS SURVEY FINDINGS

1.0 Executive Summary

The information contained herein has been extracted from the Target Environmental Services, Inc. (TARGET), report and discusses the results of passive soil gas surveys conducted at Study Areas 13 and 14. These sites are contiguous and could not be readily separated. The complete report contains detailed information on quality assurance/quality control and laboratory procedures and data tables. The complete report may be obtained from ABB Environmental Services, Inc. (ABB-ES), Orlando, Florida.

On February 6-11, 1995, TARGET conducted a soil gas survey at Naval Training Center (NTC), Orlando. A total of 88 passive soil gas samples was collected at the site from a depth of 3 feet. The samples were analyzed on a gas chromatograph (GC) equipped with an electron capture detector (GC/ECD) for halogenated hydrocarbons and a flame ionization detector (GC/FID) for petroleum hydrocarbons. The objective of the survey was to identify and possibly delineate the extent of volatile organic contamination within the shallow subsurface of Study Areas 13 and 14.

An occurrence of tetrachloroethane (PCE) was mapped in the vicinity of the north end of Building 1100 and is, therefore, suggestive of a release of drycleaning solvent, since the building was the base laundry facility. An occurrence of trichloroethene (TCE) was observed in the same area and is most likely the result of the natural degradation of PCE within the shallow subsurface. A low-level occurrence of PCE was also observed along the fence to the south of Building 1100 and may or may not be related to the occurrence at the north end of the building.

2.0 Introduction

ABB-ES contracted TARGET to perform a passive soil gas survey at the NTC, Orlando. The site includes Study Area 13, the base laundry (Building 1100), and Study Area 14, a warehouse (Building 1102) and truck scales. Study Area 13 may have contaminants including naphtha and PCE as well as Number 2 fuel oil for backup boiler fuel. The objective of the survey was to identify and possibly delineate the extent of volatile organic contamination within the shallow subsurface.

The survey grid was designed by ABB-ES, and onsite changes to the sampling plan were, therefore, directed by them in response to site conditions encountered by TARGET during sampling. The proposed sampling plan included 130 passive soil gas samples to be collected at a depth of 3 feet and an approximate grid spacing of 50 feet. The field phase of the survey was conducted on February 6-11, 1995.

3.0 Sample Collection and Analysis

Soil gas samples were collected at a total of 88 locations at the site, as shown on Figure 1, from a total of 90 sample point installations installed to a depth of 3 feet. Also shown on Figure 1 are sample point locations included as part of Study Area 14, located to the east. Each boring was screened at the surface with a portable FID prior to the installation of a passive sampling point.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to U.S. Environmental

Protection Agency (USEPA) Method 8010 (modified) on a GC equipped with an ECD, and using direct injection. Specific analytes standardized for this analysis were as follows:

- 1,1-dichloroethene (1,1 DCE)
- methylene chloride (CH_2Cl_2)
- trans-1,2-dichloroethene (t1,2 DCE)
- 1,1-dichloroethane (1,1 DCA)
- cis-1,2-dichloroethene (c1,2 DCE)
- chloroform ($CHCl_3$)
- 1,1,1-trichloroethane (1,1,1 TCA)
- carbon tetrachloride (CCl_4)
- trichloroethene (TCE)
- 1,1,2-trichloroethane (1,1,2 TCA)
- tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to USEPA Method 8020 (modified) on a GC equipped with an FID, and using direct injection. The analytes selected for standardization in this analysis were as follows:

- benzene
- toluene
- ethylbenzene
- meta- and para- xylene
- ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products or petroleum-based solvents.

The results of the laboratory analyses of the soil gas samples are reported in micrograms per liter-vapor ($\mu g/\ell$-v), not to be confused with "micrograms per liter" (parts per billion) in water analyses. The two are not equivalent in gas analyses due to the difference in the mass of equal volumes of water and gas matrices.

4.0 Results

The results have been mapped and contoured to produce Figures 2 and 3. Dashed contours are used where patterns are extrapolated into areas of less complete data or as auxiliary contours. Map sample points with no data shown indicate that the analyte concentrations in the sample were below the reporting limit.

Portable FID screening results revealed only two sampling point borings with detectable total volatiles concentrations. Sample SG15 yielded 45 parts per million (ppm) on the meter, and Sample SG38 yielded approximately 50 ppm.

The only GC/FID analysis result above the reporting limit was 93 micrograms per liter total FID volatiles as naphtha in Sample SG38. Of the GC/ECD analytes, only TCE (Figure 2) and PCE (Figure 3) were observed above the reporting limit. TCE was observed at low concentrations only in the vicinity of the northern end

of Building 1100. PCE was observed at higher concentrations in the same area and at low concentrations along the fence south of the building's shipping and receiving area.

5.0 Interpretation

The GC/FID chromatogram signatures did not reveal any identifiable fuel signatures. However, the signature of Sample SG38 did show a peak pattern indicative of terpenes, naturally occurring hydrocarbons exuded by plant roots.

The occurrence of PCE in the vicinity of the north end of Building 1100 suggests a release of drycleaning solvent that was typically used there. The occurrence of low concentrations of TCE in the same area is consistent with the natural degradation of PCE within the shallow subsurface.

The low-level occurrence of PCE along the fence south of Building 1100 suggests one of the following: migration of PCE underneath the building from its north end, a different PCE release related to shipping or receiving the solvent, or migration of the solvent from offsite. A lack of more sampling points in this area leaves the source for this occurrence in question.

No other contamination was observed onsite during this survey.

6.0 Conclusions

- An occurrence of PCE was mapped in the vicinity of the north end of Building 1100 and is, therefore, suggestive of a release of drycleaning solvent, since the building was the base laundry facility. An occurrence of TCE was observed in the same area and is most likely the result of the natural degradation of PCE within the shallow subsurface.

- A low-level occurrence of PCE was also observed along the fence to the south of Building 1100 and may or may not be related to the occurrence at the north end of the building.

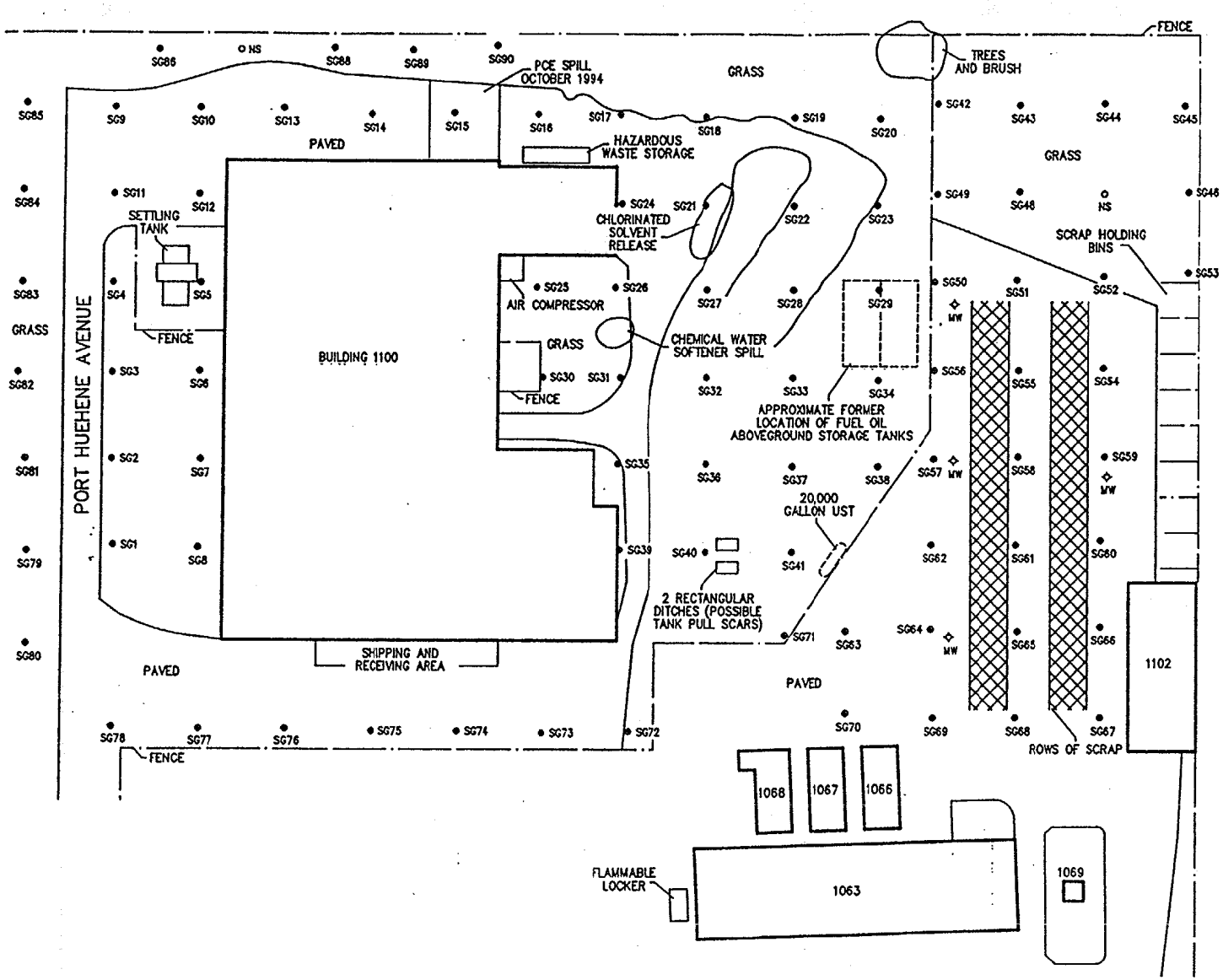
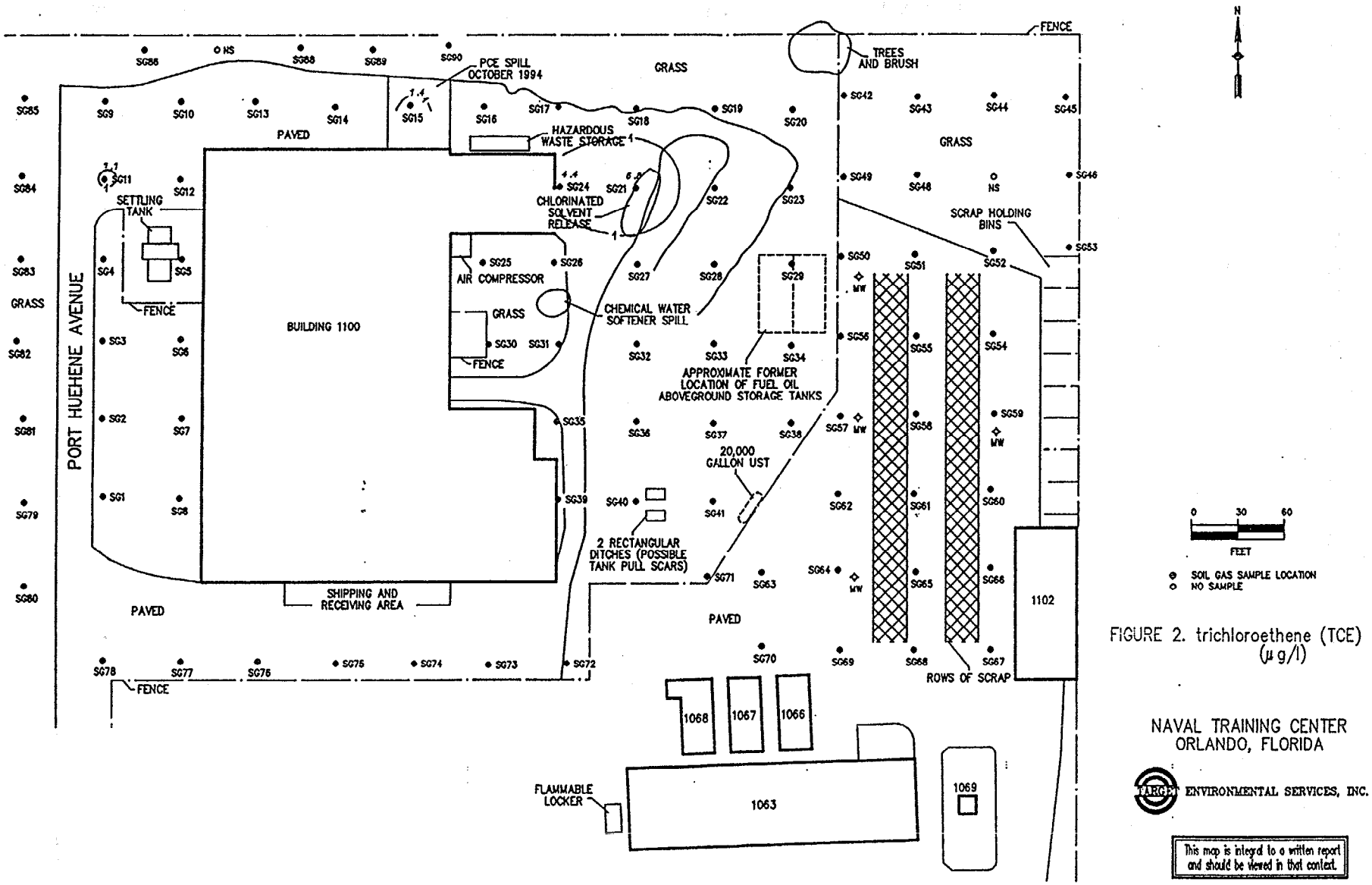


FIGURE 1. Sample Locations

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.



N

0 30 60
FEET

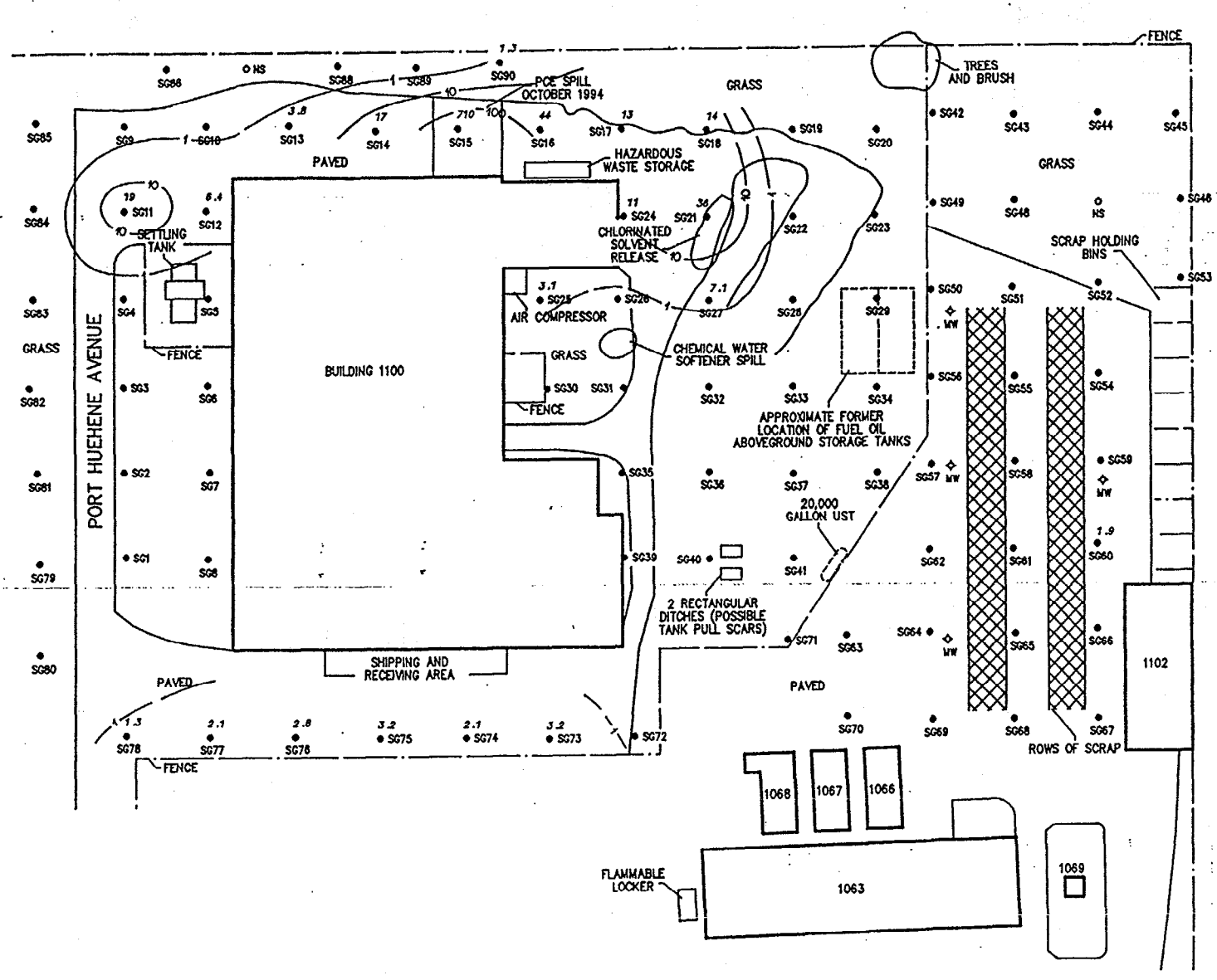
SOIL GAS SAMPLE LOCATION
NO SAMPLE

FIGURE 2. trichloroethene (TCE) (µg/l)

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.



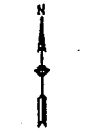


FIGURE 3. tetrachloroethene (PCE) (µg/l)

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

APPENDIX C

BORING LOGS AND GROUNDWATER MONITORING WELL DIAGRAMS

Project: BRAC NTC, Group II, Site Screening	**Well ID:** OLD-14-01		**Boring ID:** 14B001
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538943.23	**Easting:** 545345.19	**Date started:** 03/27/95	**Compltd:** 03/27/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 3-13 ft. bls	**Protection level:** D
TOC elev.: 109.00 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 18Ft.	**Dpth to** ▽ 4 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/27/95		**Site:** Study Area 14

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
	14B00101		ph	0	SILTY QUARTZ SAND: Dark brownish-gray, fine-to medium-grained, dry to moist, slightly plastic, some interbedded peaty mat, some large chunks of concrete in top 4'.		SM	posthole	
			ph	0				posthole	
				0				2,3,2,1	
5			60%		SILTY QUARTZ SAND: Dark brown, medium-grained, brown silt, non plastic, saturated.				
			80%	0				1,2,2,2	
			70%	0				1,1,1,1	
10	14B00102		80%	0				2,3,4,7	
			90%	0				1,1,1,1	
					* = approximate depth				
15									
20									

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group II, Site Screening	**Well ID:** OLD-14-02		**Boring ID:** 14B002
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538652.39	**Easting:** 545436.40	**Date started:** 03/27/95	**Compltd:** 03/27/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 5-15 ft. bls	**Protection level:** D
TOC elev.: 113.88 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 18Ft.	**Dpth to** ⊽ 10 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/27/95		**Site:** Study Area 14

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0	LIMESTONE SUBGRADE		GP	posthole	
	14B00201		ph		SILTY QUARTZ SAND: Gray.		SM		
				0	QUARTZ SAND: Off-white, fine-to medium-grained, well rounded, sparse dark graining, dry, non plastic.		SP	posthole	
			ph						
				0				9,4,7,5	
5			75%						
				0				2,3,4,2	
			60%						
				0				1,1,3,2	
			60%		QUARTZ SAND: Dark brown, fine-to medium-grained, slightly silty, moist, non plastic, saturated @ 10'bls.				
10	14B00202			0				2,1,3,6	
			60%						
				0				3,4,5,5	
			90%						
				0				3,3,2,3	
15			90%						
					* = approximate depth				
20									

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group II, Site Screening	**Well ID:** OLD-14-03	**Boring ID:** 14B003
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.	**Job No.:** CTO-107
Northing: 1538555.82	**Easting:** 545252.87	**Date started:** 02/28/95 — **Complid:** 02/28/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 5-15 ft. bls — **Protection level:** D
TOC elev.: 113.29 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 18Ft. — **Dpth to** ⧩ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 02/28/95	**Site:** Study Area 14

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0	LIMESTONE SUBGRADE		GP	posthole	
	14B00301		ph		SILTY QUARTZ SAND: Gray.		SM		
				0	QUARTZ SAND: White, fine-to medium-grained, loose, dry.		SP	posthole	
			ph						
				0				2,2,2,3	
5			80%						
	14B00302			0	QUARTZ SAND: Reddish-brown, fine-to medium-grained, slightly cohesive, damp.			4,5,8,8	
			80%						
					SILTY QUARTZ SAND: Gray, fine-grained gravel, rounded.		SM		
				0				1,2,2,4	
					QUARTZ SAND: Gray to brown, medium-grained, slightly silty, wet.		SP		
			80%						
10				0				2,5,5,6	
			50%						
				0	QUARTZ SAND: Gray to very dark brown, some shell matrix.			3,3,8,12	
			60%						
				0				1,2,1,1	
15			80%						
					* = approximate depth				
20									

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group II, Site Screening	**Well ID:** OLD-14-04		**Boring ID:** 14B004
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536865.58	**Easting:** 545308.15	**Date started:** 03/27/95	**Compltd:** 03/27/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 5-15 ft. bls	**Protection level:** D
TOC elev.: 113.33 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 16Ft.	**Dpth to** ▽ 10 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/27/95		**Site:** Study Area 14

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0	LIMESTONE SUBGRADE		GP	posthole	
	14B00401		ph		SILTY QUARTZ SAND: Gray to brown, fine-to medium-grained, dry.		SM		
				0	QUARTZ SAND: Off-white, fine-to medium-grained, well rounded, slightly silty, moist @ 8'lbs.		SP	posthole	
			ph						
				2				4,4,4,8	
5			60%						
				1				3,3,3,3	
			80%						
				0				2,2,3,3	
			60%		SILTY QUARTZ SAND: Dark brown, fine-to medium-grained, damp to 10'bls then wet, saturated @ 12'bls.		SM		
10	14B00402			0				2,5,3,2	
			60%						
				0				2,3,4,8	
			80%						
				n/a				n/a	
15			n/a						
					* = approximate depth				
20									

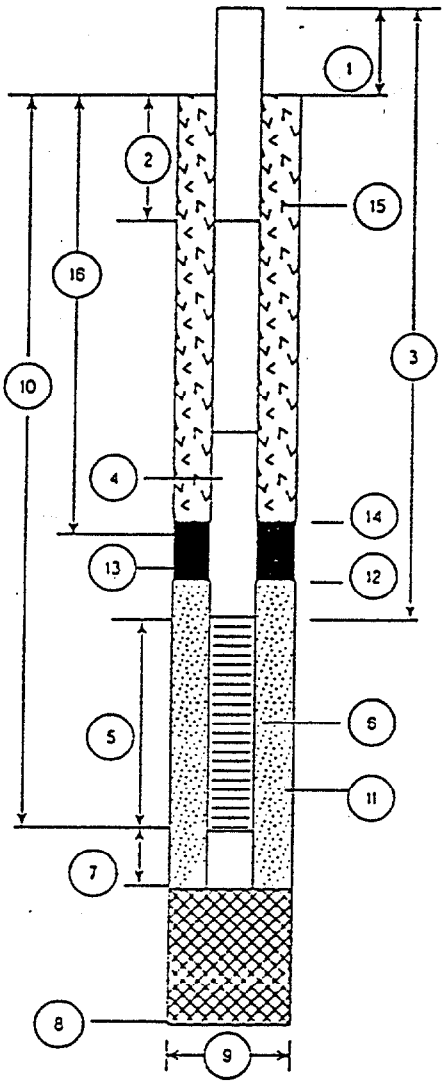
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-14-01

DATE OF INSTALLATION: 3/27/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 3'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 3'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 2"
8. Total Depth of Boring: 14'
9. Diameter of Boring: 6 1/4"
10. Depth to Bottom of Screen: 13'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 500 lbs Size: 20/30
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 15 lbs
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: POURED
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

KCH-HC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

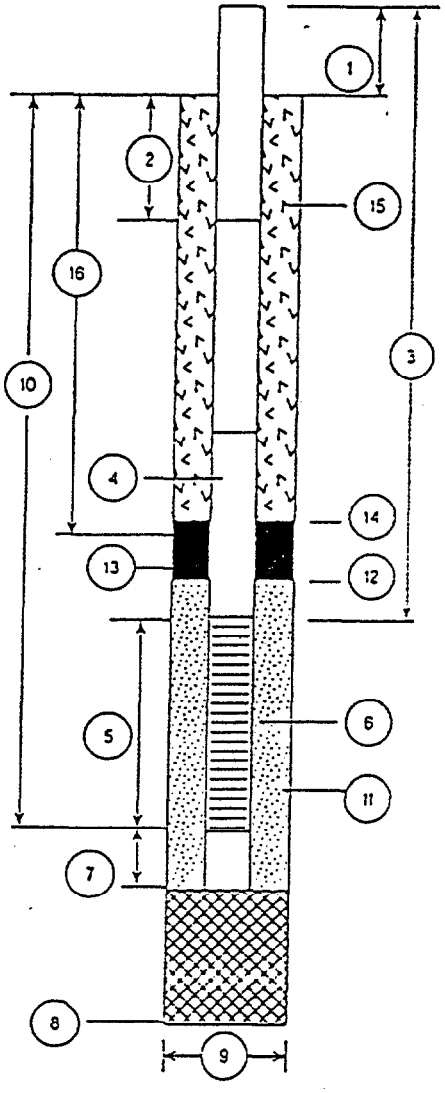
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-19-02

DATE OF INSTALLATION: 3/27/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 5'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 5'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 2"
8. Total Depth of Boring: 10'
9. Diameter of Boring: 6 1/4"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 550. lbs (30 lb) Size: 20/30 30/65
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 10. lbs
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: POURED
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

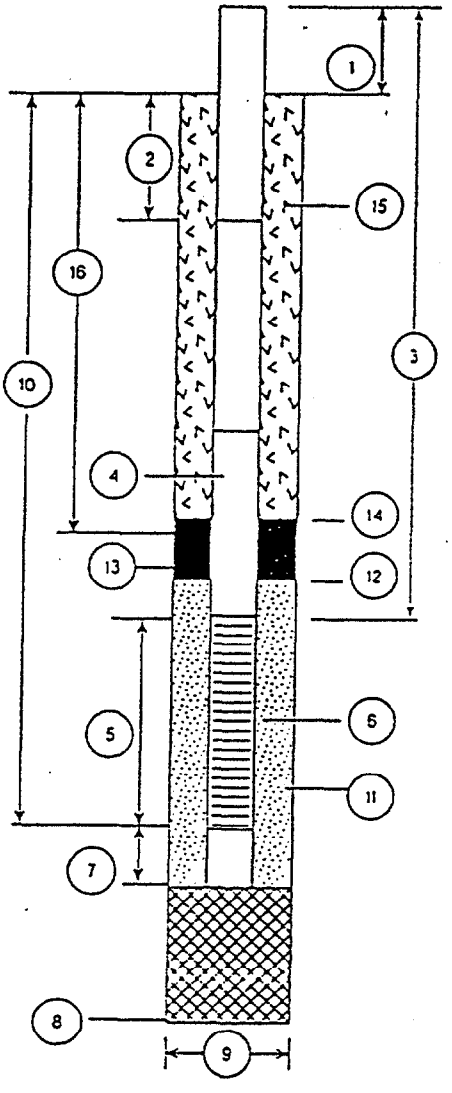
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-14-C3

DATE OF INSTALLATION: 2/20/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 5'
   Coupling Interval Depths: 5'
3. Total Length of Riser Pipe: 5'
4. Type of Riser Pipe: 2" DIA PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA PVC, .010 SLOT
7. Length of Sump: 2'
8. Total Depth of Boring: 16'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 500 lbs + 500 lbs Size: 20/30 + 30/65
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 15 lbs
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: POURED
16. Tot. Depth of 8 in. Steel Casing: N/A.

COMMENTS ON INSTALLATION

WCH-NC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

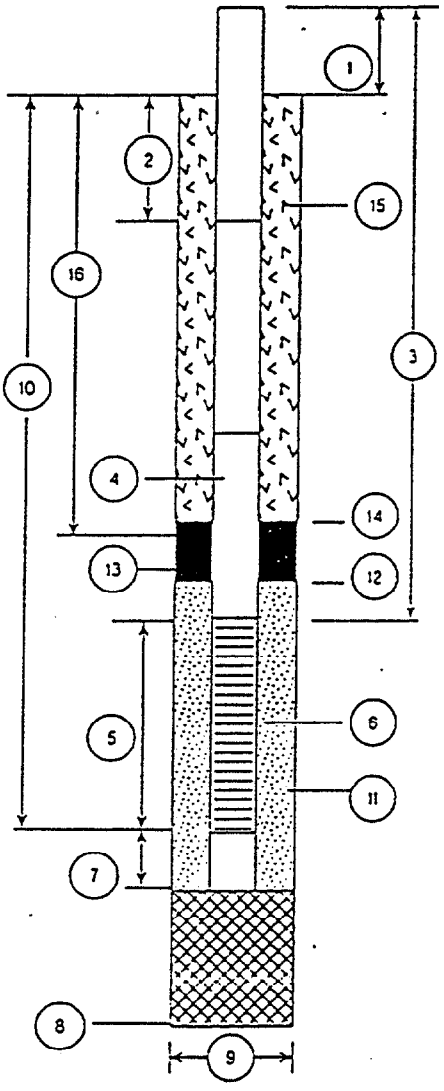
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OUD-14-04

DATE OF INSTALLATION: 3/27/95



1. Height of Casing above ground: 0.'
2. Depth to first Coupling: 5'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 5'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 2"
8. Total Depth of Boring: 16'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 400 lbs / 10 lbs Size: 20/30 / 30/65
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 15 lbs
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: POURED
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

WCH-NC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

APPENDIX D

SUMMARY OF DETECTIONS IN SOIL AND GROUNDWATER ANALYTICAL RESULTS

Table D-1
Summary of Positive Detections in Surface Soil Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Date: Feet bls:	Background [1] Screening	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	14B00101 02/25/95 1	14B00201 02/25/95 2	14B00301 02/25/95 2	14B00401 02/25/95 2
Volatile Organic Compounds (µg/kg)								
Tetrachloroethene	--	[4]12,000/30	12,000 c	110,000 c	--	11	--	1 J
General Chemistry (mg/kg)								
Total Petroleum Hydrocarbons	--	ND	ND	ND	40.2	9.1	5.5	11.2
Semivolatile Organic Compounds (µg/kg)								
Pyrene	--	2,200,000	2,300,000 n	61,000,000 n	230 J	--	--	--
Chrysene	--	140,000	88,000 c	780,000 c	200 J	--	--	--
Benzo(b)fluoranthene	--	1,400	880 c	7,800 c	220 J	--	--	--
Benzo(k)fluoranthene	--	14,000	8,800 c	78,000 c	180 J	--	--	--
Benzo(a)anthracene	--	1,400	880 c	7,800 c	110 J	--	--	--
Indeno(1,2,3-cd)pyrene	--	1,400	880 c	7,800 c	140 J	--	--	--
Benzo(g,h,i)perylene	--	14,000	2,300,000 n	61,000,000 n	180 J	--	--	--
Pesticides/PCBs (µg/kg)								
4,4'-DDE	130/39.2	3,000	1,900 c	17,000 c	6.2 J	--	--	5.8
4,4'-DDT	--	3,100	1,900 c	17,000 c	17	--	6.4	16
alpha-Chlordane	--	800	490 c	4,400 c	1.8 J	--	--	--
gamma-Chlordane	--	800	490 c	4,400 c	1.6 NJ	--	--	--
Inorganic Analytes (mg/kg)								
Aluminum	2,088	75,000	78,000 n	1,000,000 n	1,730	945	13.1 B	844
Arsenic	1.0	0.8	0.43 c/23 n	3.8 c/610 n	0.62 B	--	--	0.84 B
Barium	8.7	5,200	5,500 n	140,000 n	5.8 B	1.8 B	0.28 B	2 B
Beryllium	0.09	0.2	0.15 c	1.3 c	0.07 B	--	--	--
Cadmium	0.98	37	39 n	1,000 n	1.7	--	--	--
Calcium	25,295	ND	1,000,000	1,000,000	12,400	2,460	458 B	1,710
Chromium	4.6	290	390 n	10,000 n	16.4	1.3 B	0.63 B	1 B
Copper	4.1	ND	3,100 n	82,000 n	30.2	--	--	--
Iron	712	ND	23,000 n	610,000 n	660	259	--	279

See notes at end of table.

Table D-1 (Continued)
Summary of Positive Detections In Surface Soil
Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Date: Feet bls:	Background [1] Screening	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	14B00101 02/25/95 1	14B00201 02/25/95 2	14B00301 02/25/95 2	14B00401 02/25/95 2
Inorganic Analytes (mg/kg)								
Lead	14.5	500	400	400	40.9	1.1	--	1.1
Magnesium	328	ND	460,468	460,468	175 B	41.6 B	17.1 B	50.7 B
Manganese	8.1	370	1,800 n	47,000 n	14.7	1.3 B	--	1 B
Nickel	4.4	1,500	1,600 n	41,000 n	9.2	--	--	--
Vanadium	3.1	490	550 n	14,000 n	2.5 B	0.58 B	--	0.68 B
Zinc	17.2	23,000	23,000 n	610,000 n	52.9	--	--	5.3

[1] The background screening value is twice the average of detected background concentrations for inorganic analytes. For organic compounds, values are the mean of detected background concentrations, presented for comparison purposes only.

[2] SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection [FDEP] memorandum, September 29, 1995). Arsenic value is as revised in Applicability of Soil Cleanup Goals for Florida (FDEP memorandum, January 19, 1996). Values indicated are from a residential scenario. Chromium values are for chromium VI.

[3] RBC = Risk-Based Concentration Table, U.S. Environmental Protection Agency Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (Office of Solid Waste and Emergency Response directive 9355-4-12). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

[4] Residential/Leaching SCGs.

Notes: BRAC = Base Realignment and Closure.
bls = below land surface.
µg/kg = microgram per kilogram.
c= carcinogenic effects.
-- = analyte/compound was not detected at reporting limit.
J = estimated value.
mg/kg = milligram per kilogram.
ND = not determined.
n= noncarcinogenic effects.
PCBs = polychlorinated biphenyls.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
N = indicates presumptive evidence of the compound.
B = reported concentration is between the instrument detection limit and the contract-required detection limit.
▒▒ = bolded/shaded values indicate exceedance of regulatory guidance and background.

All inorganic results expressed in mg/kg soil dry weight; organics in µg/kg soil dry weight.

Table D-2
Summary of Positive Detections in Subsurface Soil
Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Date: Feet bls:	Background [1] Screening	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	14B00102 02/25/95 10	14B00102D 02/25/95 10	14B00202 03/27/95 10	14B00302 02/28/95 6	14B00402 03/27/95 10
Volatile Organic Compounds (µg/kg)									
Acetone	--	NA	7,800,000 n	200,000,000 n	--	--	6 J	33	5 J
Tetrachloroethene	--	30	12,000 c	110,000 c	--	--	--	--	2 J
General Chemistry (mg/kg)									
Total Petroleum Hydrocarbons	--	NA	ND	ND	594	558	--	--	--
Semivolatile Organic Compounds (µg/kg)									
Fluoranthene	--	NA	31,000,000 n	82,000,000 n	--	--	--	140 J	--
Pyrene	--	NA	2,300,000 n	61,000,000 n	--	--	--	170 J	--
Chrysene	--	NA	88,000 c	780,000 c	--	--	--	150 J	--
Benzo(b)fluoranthene	--	NA	880 c	7,800 c	--	--	--	170 J	--
Benzo(k)fluoranthene	--	NA	8,800 c	78,000 c	--	--	--	--	--
Benzo(a)anthracene	--	NA	880 c	7,800 c	--	--	--	100 J	--
Benzo(g,h,i)perylene	--	NA	2,300,000 n	61,000,000 n	--	--	--	110 J	--
Pesticides/PCBs (µg/kg)									
4,4'-DDD	--	NA	2,700 c	24,000 c	9.9 J	9.4 J	--	--	--
4,4'-DDE	39.2	NA	1,900 c	17,000 c	5 J	5.1	--	32	--
4,4'-DDT	--	NA	1,900 c	17,000 c	--	--	--	100	--
alpha-BHC	--	NA	100 c	910 c	--	--	--	6.1	--
alpha-Chlordane	--	NA	490 c	4,400 c	--	--	--	4.6	--
gamma-Chlordane	--	NA	490 c	4,400 c	--	--	--	4.4 J	--
General Chemistry (mg/kg)									
Total Petroleum Hydrocarbons	NA	NA	ND	ND	NA	NA	79.4	48.4	24.2

See notes at end of table.

Table D-2 (Continued)
Summary of Positive Detections in Subsurface Soil
Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Date: Feet bls:	Background [1] Screening	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	14B00102 02/25/95 10	14B00102D 02/25/95 10	14B00202 03/27/95 10	14B00302 02/28/95 6	14B00402 03/27/95 10
Inorganic Analytes (mg/kg)									
Aluminum	2,119	NA	78,000 n	1,000,000 n	1,880	2,090	323	741	1,580
Arsenic	1.1	NA	0.43 c/23 n	3.8 c/610 n	2.6 B	1.8 B	--	--	0.17 B
Barium	3.6	NA	5,500	140,000 n	18.6 B	19.9 B	0.49 B	3.9 B	10.1 B
Beryllium	--	NA	0.15 c	1.3 c	0.36 B	0.49 B	--	0.06 B	0.08 B
Calcium	115	NA	1,000,000	1,000,000	2,310	2,440	3,340	25,400 J	566 B
Chromium	3.7	NA	390 n	10,000 n	33	27.2	1.8 B	1.8 B	4.7
Cobalt	1.6	NA	4,700,000 n	120,000,000 n	1 B	0.87 B	--	--	--
Copper	--	NA	3,100 n	82,000 n	39.2	48.4	2.6 B	0.87 J	3.6 B
Iron	264	NA	23,000 n	610,000 n	5,500	7,260	72	216 J	130
Lead	3.9	NA	400	400	6	6.2	0.56 B	5.2 J	4.4
Magnesium	32.8	NA	460,468	460,468	818 B	949 B	31.7 B	183 B	28.3 B
Manganese	2.1	NA	1,800 n	47,000 n	5.2	6.6	1.8 B	5.3	1.8 B
Mercury	--	NA	23 n	610 n	--	--	--	0.03 B	--
Nickel	--	NA	1,600 n	41,000 n	3.1 B	4 B	--	--	--
Potassium	185	NA	297,016	297,016	1,440	1,660	--	--	--
Sodium	--	NA	1,000,000	1,000,000	--	--	116 B	--	159 B
Thallium	--	NA	6.3 n	160 n	--	--	--	--	0.15 B
Vanadium	3.4	NA	550 n	14,000 n	6.9 B	8.1 B	0.68 B	0.56 J	2.6 B
Zinc	5.6	NA	23,000 n	610,000 n	48.4	56.7	--	7.3	--

See notes at end of table.

Table D-2(Continued)
Summary of Positive Detections in Subsurface Soil
Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

[1] Background values are for subsurface soils and surface soils, respectively. The background screening value is twice the average of detected background concentrations for inorganic analytes. For organic compounds, values are the mean of detected background concentrations, presented for comparison purposes only.

[2] SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection [FDEP] memorandum, September 29, 1995). Arsenic value is as revised in Applicability of Soil Cleanup Goals for Florida (FDEP memorandum, January 19, 1996). Values indicated are for a leaching scenario, and only apply to tetrachloroethene (PCE). PCE is the only organic constituent present in subsurface soil and also present in groundwater above Florida Groundwater Guidance Concentrations.

[3] RBC = Risk-Based Concentration Table, U.S. Environmental Protection Agency Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (Office of Solid Waste and Emergency Response directive 9355-4-12). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

Notes:
BRAC = Base Realignment and Closure.
bls = below land surface.
µg/kg microgram per kilogram.
-- = analyte/compound was not detected at reporting limit.
NA = not analyzed.
n = noncarcinogenic effects.
J = estimated value.
c = carcinogenic effects.
mg/kg = milligram per kilogram.
ND = not determined.
B = reported concentration is between the instrument detection limit and the contract-required detection limit.
PCBs = polychlorinated biphenyls.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
BHC = benzene hexachloride.
▒▒ = bolded/shaded values indicate exceedance of regulatory guidance and background.

All inorganic results expressed in mg/kg soil dry weight; organics in µg/kg soil dry weight.

Table D-3
Summary of Detections in Groundwater
Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Data: Feet bls:	Background [1] Screening	FDEPG	FEDMCL	RBC [2] for Tap Water	OLD-14-01A 14G00101 04/06/95	OLD-14-02A 14G00201 04/06/95	OLD-14-03A 14G00301 03/10/95	OLD-14-03A 14G00302 06/08/95	OLD-14-04A 14G00401 04/06/95	OLD-14-04A 14G00401D 04/06/95
Volatile Organic Compounds (µg/ℓ)										
Methylene chloride	--	[3]5	5	0.15 c	--	2 J	--	NA	--	--
Chloroform	2.4	[4]6	100	0.15 c	--	0.2 J	--	NA	--	--
Trichloroethene	--	[3]3	5	1.6 c	--	--	--	NA	20 J	19 J
Tetrachloroethene	--	[3]3	5	1.1 c	--	1.37 J	--	NA	46	46
Semivolatile Organic Compounds (µg/ℓ)										
bis(2-Ethylhexyl)phthalate	--	[3]6	6	4.8 c	--	--	33 D	--	--	--
Dimethylphthalate	--	[5]70,000	ND	370,000 n	--	--	--	--	--	1 J
Phenol	--	--	--	22,000 n	--	--	--	1 J	--	--
Inorganic Analytes (µg/ℓ)										
Aluminum	4,067	[6]200	200	37,000 n	105 B	81.6 B	--	NA	143 B	121 B
Antimony	4.1	[3]6	6	15 n	--	10.1 B	17.6	NA	10.6 B	10.4 B
Arsenic	5.0	[3]50	50	0.045 c/11 n	1.9 B	2 B	--	NA	--	--
Barium	31.4	[3]2,000	2,000	2,600 n	11.6 B	4.5 B	5.7 B	NA	5.8 B	5.3 B
Beryllium	--	[3]4	4	0.016 c	0.1 B	--	--	NA	0.15 B	--
Calcium	36,830	ND	ND	1,000,000	37,200	28,100	95,500	NA	31,600	31,600
Iron	1,227	[6]300	ND	11,000 n	191	8 B	32.6 B	NA	142	145
Magnesium	4,560	ND	ND	118,807	1,280 B	2,320 B	6,740	NA	2,000 B	2,020 B
Manganese	17.0	[6]50	ND	840 n	7.4 B	3.5 B	9.4 B	NA	6.6 B	6.2 B
Potassium	5,400	ND	--	297,016	1,900 B	922 B	884 B	NA	2,720 B	2,760 B
Selenium	9.7	[3]50	50	180 n	--	--	3.2 B	NA	--	--
Silver	--	[6]100	ND	180 n	3.6 B	--	--	NA	--	3.6 B
Sodium	18,222	[3]160,000	ND	396,022	1,340 B	7,370	8,300	NA	40,500	41,600
Vanadium	20.6	[5]49	ND	260 n	2.8 B	11.6 B	--	NA	7.4 B	5.7 B
Zinc	4	[6]5,000	ND	11,000 n	1.7 B	24.4	1.9 B	NA	2.3 B	1.4 B

See notes at end of table.

Table D-3 (Continued)
Summary of Detections in Groundwater
Analytical Results, Study Area 14

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

[1] Groundwater background screening value is twice the average of detected concentrations for inorganic analytes. For organic compounds, values are the mean of detected concentration, presented for comparison purposes only.
[2] RBC = Risk-Based Concentration Table, U.S. Environmental Protection Agency (USEPA) Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1995). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.
[3] Primary standard.
[4] Carcinogen.
[5] Systemic toxicant.
[6] Secondary standard.

Notes: BRAC = Base Realignment and Closure.
bls = below land surface.
FDEPG = Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994.
FEDMCL = Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
µg/ℓ = micrograms per liter.
– = analyte/compound was not detected at reporting limit.
c = carcinogenic effects.
J = estimated value.
NA = not analyzed.
D = indicates value was determined during a diluted reanalysis.
ND = not determined.
n = noncarcinogenic effects.
B = reported concentration is between the instrument detection limit and the contract-required detection limit.
▒▒ = bolded/shaded value indicate exceedance of regulatory guidance and background.

APPENDIX E

SUMMARY OF ANALYTICAL RESULTS

Definition of Data Qualifiers

Naval Training Center
Orlando, Florida

Qualifier	Definition
U	Compound analyzed for but not detected at or below the reporting limit.
J	Reported concentration is an estimated quantity.
R	Data were rejected during data validation, unusable.
B (inorganics)	Reported concentration is between the instrument detection limit and the contract-required detection limit.
E	Estimated value; concentration is outside the instrument calibration range.
D	Value was determined from sample dilution.
P	Indicates greater than 25 percent difference between concentrations from original and confirmatory GC column.
NA	Not analyzed.
NJ	Presumptive evidence for the presence of the material at an estimated value.

Appendix E-1
Summary of Soil Analytical Results
Target Compound List Volatile Organics

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14B00101		14B00102		14B00102D		14B00201		14B00202		14B00301		14B00302		14B00401		14B00402	
Lab_ID	G6955011		G6955015		G6955018		G6955012		G7197003		G6955013		G6981003		G6955014		G7197004	
Collection Date	2/25/95		2/25/95		2/25/95		2/25/95		3/27/95		2/25/95		2/28/95		2/25/95		3/27/95	
Volatile Organics, ug/kg																		
1,1,1-Trichloroethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,1,2,2-Tetrachloroethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,1,2-Trichloroethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,1-Dichloroethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,1-Dichloroethene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,2-Dichloroethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,2-Dichloroethene (total)	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
1,2-Dichloropropane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
2-Butanone	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
2-Hexanone	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
4-Methyl-2-pentanone	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Acetone	11	U	36	U	43	U	12	U	6	J	10	U	33		12	U	5	J
Benzene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Bromodichloromethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Bromoform	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Bromomethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Carbon disulfide	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Carbon tetrachloride	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Chlorobenzene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Chloroethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Chloroform	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Chloromethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
cis-1,3-Dichloropropene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Dibromochloromethane	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Ethylbenzene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Methylene chloride	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Styrene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Tetrachloroethene	11	U	13	U	13	U	11		12	U	10	U	11	U	1	J	2	J
Toluene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
trans-1,3-Dichloropropene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Trichloroethene	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Vinyl chloride	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U
Xylene (total)	11	U	13	U	13	U	10	U	12	U	10	U	11	U	10	U	12	U

Appendix E-2
Summary of Soil Analytical Results
Target Compound List Semivolatile Organics

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14B00101		14B00102		14B00102D		14B00201		14B00202		14B00301		14B00302		14B00401		14B00402	
Lab_ID	G6955011		G6955015		G6955018		G6955012		G7197003		G6955013		G6981003		G6955014		G7197004	
Collection Date	2/25/95		2/25/95		2/25/95		2/25/95		3/27/95		2/25/95		2/28/95		2/25/95		3/27/95	
Semivolatile Organics, ug/kg																		
1,2,4-Trichlorobenzene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
1,2-Dichlorobenzene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
1,3-Dichlorobenzene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
1,4-Dichlorobenzene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2,2'-oxybis(1-Chloropropane)	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2,4,5-Trichlorophenol	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
2,4,6-Trichlorophenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2,4-Dichlorophenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2,4-Dimethylphenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2,4-Dinitrophenol	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
2,4-Dinitrotoluene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2,6-Dinitrotoluene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2-Chloronaphthalene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2-Chlorophenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2-Methylnaphthalene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2-Methylphenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
2-Nitroaniline	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
2-Nitrophenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
3,3'-Dichlorobenzidine	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
3-Nitroaniline	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
4,6-Dinitro-2-methylphenol	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
4-Bromophenyl-phenylether	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
4-Chloro-3-methylphenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
4-Chloroaniline	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
4-Chlorophenyl-phenylether	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
4-Methylphenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
4-Nitroaniline	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
4-Nitrophenol	890	U	1100	U	1100	U	860	U	980	U	850	U	900	U	870	U	990	U
Acenaphthene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Acenaphthylene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Anthracene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Benzo(a)anthracene	110	J	430	U	430	U	340	U	400	U	340	U	100	J	350	U	410	U
Benzo(a)pyrene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U

Appendix E-2
Summary of Soil Analytical Results
Target Compound List Semivolatile Organics

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14B00101		14B00102		14B00102D		14B00201		14B00202		14B00301		14B00302		14B00401		14B00402	
Lab_ID	G6955011		G6955015		G6955018		G6955012		G7197003		G6955013		G6981003		G6955014		G7197004	
Collection Date	2/25/95		2/25/95		2/25/95		2/25/95		3/27/95		2/25/95		2/28/95		2/25/95		3/27/95	
Benzo(b)fluoranthene	220	J	430	U	430	U	340	U	400	U	340	U	170	J	350	U	410	U
Benzo(g,h,i)perylene	180	J	430	U	430	U	340	U	400	U	340	U	110	J	350	U	410	U
Benzo(k)fluoranthene	180	J	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
bis(2-Chloroethoxy)methane	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
bis(2-Chloroethyl)ether	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
bis(2-Ethylhexyl)phthalate	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Butylbenzylphthalate	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Carbazole	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Chrysene	200	J	430	U	430	U	340	U	400	U	340	U	150	J	350	U	410	U
Di-n-butylphthalate	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Di-n-octylphthalate	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Dibenz(a,h)anthracene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Dibenzofuran	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Diethylphthalate	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Dimethylphthalate	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Fluoranthene	350	U	430	U	430	U	340	U	400	U	340	U	140	J	350	U	410	U
Fluorene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Hexachlorobenzene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Hexachlorobutadiene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Hexachlorocyclopentadiene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Hexachloroethane	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Indeno(1,2,3-cd)pyrene	140	J	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Isophorone	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
N-Nitroso-di-n-propylamine	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
N-Nitrosodiphenylamine (1)	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Naphthalene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Nitrobenzene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Pentachlorophenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Phenanthrene	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Phenol	350	U	430	U	430	U	340	U	400	U	340	U	360	U	350	U	410	U
Pyrene	230	J	430	U	430	U	340	U	400	U	340	U	170	J	350	U	410	U

Appendix E-3
Summary of Soil Analytical Results
Target Compound List Pesticides and PCBs

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14B00101		14B00102		14B00102D		14B00201		14B00202		14B00301		14B00302		14B00401		14B00402	
Lab_ID	G6955011		G6955015		G6955018		G6955012		G7197003		G6955013		G6981003		G6955014		G7197004	
Collection Date	2/25/95		2/25/95		2/25/95		2/25/95		3/27/95		2/25/95		2/28/95		2/25/95		3/27/95	
Pesticides/PCBs, ug/kg																		
4,4'-DDD	7	U	9.9	J	9.4	J	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
4,4'-DDE	6.2	J	5	J	5.1		3.4	U	4	UJ	3.4	U	32		5.8		4.1	U
4,4'-DDT	17		8.2	U	4.1	U	3.4	U	4	UJ	6.4		100		16		4.1	U
Aldrin	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
alpha-BHC	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	6.1		1.8	U	2.1	U
alpha-Chlordane	1.8	J	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4.6		1.8	U	2.1	U
Aroclor-1016	35	U	82	U	41	U	34	U	40	UJ	34	U	79	U	34	U	41	U
Aroclor-1221	72	U	170	U	83	U	69	U	82	UJ	68	U	160	U	70	U	83	U
Aroclor-1232	35	U	82	U	41	U	34	U	40	UJ	34	U	79	U	34	U	41	U
Aroclor-1242	35	U	82	U	41	U	34	U	40	UJ	34	U	79	U	34	U	41	U
Aroclor-1248	35	U	82	U	41	U	34	U	40	UJ	34	U	79	U	34	U	41	U
Aroclor-1254	70	U	82	U	41	U	34	U	40	UJ	34	U	79	U	34	U	41	U
Aroclor-1260	70	U	82	U	41	U	34	U	40	UJ	34	U	79	U	34	U	41	U
beta-BHC	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
delta-BHC	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
Dieldrin	7	U	8.2	U	4.1	U	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
Endosulfan I	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
Endosulfan II	7	U	8.2	U	4.1	U	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
Endosulfan sulfate	7	U	8.2	U	4.1	U	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
Endrin	7	U	8.2	U	4.1	U	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
Endrin aldehyde	7	U	8.2	U	4.1	U	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
Endrin ketone	7	U	8.2	U	4.1	U	3.4	U	4	UJ	3.4	U	7.9	U	3.4	U	4.1	U
gamma-BHC (Lindane)	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
gamma-Chlordane	1.6	NJ	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4.4	J	1.8	U	2.1	U
Heptachlor	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
Heptachlor epoxide	1.8	U	4.2	U	2.1	U	1.8	U	2.1	UJ	1.7	U	4	U	1.8	U	2.1	U
Methoxychlor	36	U	42	U	21	U	18	U	21	UJ	17	U	40	U	18	U	21	U
Toxaphene	360	U	420	U	210	U	180	U	210	UJ	170	U	400	U	180	U	210	U

Appendix E-4
Summary of Soil Analytical Results
Target Analyte List Metals and General Chemistry

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14B00101		14B00102		14B00102D		14B00201		14B00202		14B00301		14B00302		14B00401		14B00402	
Lab_ID	G6955011		G6955015		G6955018		G6955012		G7197003		G6955013		G6981003		G6955014		G7197004	
Collection Date	2/25/95		2/25/95		2/25/95		2/25/95		3/27/95		2/25/95		2/28/95		2/25/95		3/27/95	
Inorganics, mg/kg																		
Aluminum	1730		1880		2090		945		323		13.1	B	741		844		1580	
Antimony	4.8	U	5.8	U	5.9	U	4.7	U	2.2	U	4.5	U	5	U	4.7	U	2.2	U
Arsenic	0.62	B	2.6	B	1.8	B	0.39	U	0.17	U	0.38	U	0.42	U	0.84	B	0.17	B
Barium	5.8	B	18.6	B	19.9	B	1.8	B	0.49	B	0.28	B	3.9	B	2	B	10.1	B
Beryllium	0.07	B	0.36	B	0.49	B	0.04	U	0.05	U	0.04	U	0.06	B	0.04	U	0.08	B
Cadmium	1.7		0.79	U	0.81	U	0.64	U	0.32	U	0.61	U	0.68	U	0.64	U	0.32	U
Calcium	12400		2310		2440		2460		3340		458	B	25400	J	1710		566	B
Chromium	16.4		33		27.2		1.3	B	1.8	B	0.63	B	1.8	B	1	B	4.7	
Cobalt	0.43	U	1	B	0.87	B	0.41	U	0.66	U	0.39	U	0.44	U	0.41	U	0.86	U
Copper	30.2		39.2		48.4		0.45	U	2.6	B	0.43	U	0.87	J	0.46	U	3.6	B
Iron	660		5500		7260		259		72		12.1	U	216	J	279		130	
Lead	40.9		6		6.2		1.1		0.56	B	0.3	U	5.2	J	1.1		4.4	
Magnesium	175	B	818	B	949	B	41.6	B	31.7	B	17.1	B	183	B	50.7	B	28.3	B
Manganese	14.7		5.2		6.6		1.3	B	1.8	B	0.26	U	5.3		1	B	1.8	B
Mercury	0.05	UJ	0.06	U	0.06	U	0.03	U	0.03	U	0.04	U	0.03	B	0.03	U	0.03	U
Nickel	9.2		3.1	B	4	B	2	U	1.3	U	1.9	U	2.1	U	2	U	1.3	U
Potassium	100	U	1440		1660		97	U	112	U	92.5	U	103	U	97.6	U	114	U
Selenium	0.49	U	0.59	U	0.59	U	0.47	U	0.15	U	0.45	U	0.5	U	0.47	U	0.15	U
Silver	0.57	U	0.69	U	0.7	U	0.56	U	0.56	U	0.53	U	0.59	U	0.56	U	0.57	U
Sodium	6.3	U	32.6	U	37.2	U	13.2	U	116	B	4.4	U	12.4	U	7.7	U	159	B
Thallium	0.39	U	0.47	U	0.47	U	0.37	U	0.15	U	0.36	U	0.4	U	0.38	U	0.15	B
Vanadium	2.5	B	6.9	B	8.1	B	0.58	B	0.68	B	0.41	U	0.56	J	0.68	B	2.6	B
Zinc	52.9		48.4		56.7		0.32	U	1.1	U	0.24	U	7.3		5.3		1.8	U
General chemistry																		
pH (units)	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons, mg/k	40.2		594		558		9.1		79.4		5.5		48.4		11.2		24.2	

Appendix E-5
Summary of Groundwater Analytical Results
Low Detection Limit Volatile Organics

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14G00101		14G00201		14G00201DL		14G00301		14G00401		14G00401D	
Lab_ID	G7289002		G7289001		G7289001DL		G7063008		G7289003		G7289004	
Collection Date	4/6/95		4/6/95		4/6/95		3/10/95		4/6/95		4/6/95	
Volatile Organics, ug/L												
1,1,1-Trichloroethane	1	U	1	UJ	1	R	1	U	25	U	25	U
1,1,2,2-Tetrachloroethane	1	U	1	UJ	1	R	1	U	25	U	25	U
1,1,2-Trichloroethane	1	U	1	UJ	1	R	1	U	25	U	25	U
1,1-Dichloroethane	1	U	1	UJ	1	R	1	U	25	U	25	U
1,1-Dichloroethene	1	U	1	UJ	1	R	1	U	25	U	25	U
1,2-Dibromo-3-chloropropa	1	U	1	R	1	R	1	R	25	R	25	R
1,2-Dibromoethane	1	U	1	UJ	1	R	1	U	25	U	25	U
1,2-Dichloroethane	1	U	1	UJ	1	R	1	U	25	U	25	U
1,2-Dichloropropane	1	U	1	UJ	1	R	1	U	25	U	25	U
2-Butanone	5	U	5	R	5	R	5	R	120	R	120	R
2-Hexanone	5	U	5	UJ	5	R	5	U	120	U	120	U
4-Methyl-2-pentanone	5	U	5	UJ	5	R	5	U	120	U	120	U
Acetone	5	U	5	R	5	R	5	R	120	R	120	R
Benzene	1	U	1	UJ	1	R	1	U	25	U	25	U
Bromochloromethane	1	U	1	UJ	1	R	1	U	25	U	25	U
Bromodichloromethane	1	U	1	UJ	1	R	1	U	25	U	25	U
Bromoform	1	U	1	UJ	1	R	1	U	25	U	25	U
Bromomethane	1	U	1	UJ	1	R	1	U	25	U	25	U
Carbon disulfide	1	U	1	UJ	1	R	1	U	25	U	25	U
Carbon tetrachloride	1	U	1	UJ	1	R	1	U	25	U	25	U
Chlorobenzene	1	U	1	UJ	1	R	1	U	25	U	25	U
Chloroethane	1	U	1	UJ	1	R	1	U	25	U	25	U
Chloroform	1	U	0.2	J	1	R	1	U	25	U	25	U
Chloromethane	1	U	1	UJ	1	R	1	U	25	U	25	U
cis-1,2-Dichloroethene	1	U	1	UJ	1	R	1	U	25	U	25	U
cis-1,3-Dichloropropene	1	U	1	UJ	1	R	1	U	25	U	25	U
Dibromochloromethane	1	U	1	UJ	1	R	1	U	25	U	25	U
Ethylbenzene	1	U	1	UJ	1	R	1	U	25	U	25	U
Methylene chloride	2	U	2	J	2	R	2	U	50	U	50	U
Styrene	1	U	1	UJ	1	R	1	U	25	U	25	U
Tetrachloroethene	1	U	1.37	J	7	R	1	U	46		46	
Toluene	1	U	1	UJ	1	R	1	U	25	U	25	U
trans-1,2-Dichloroethene	1	U	1	UJ	1	R	1	U	25	U	25	U
trans-1,3-Dichloropropene	1	U	1	UJ	1	R	1	U	25	U	25	U
Trichloroethene	1	U	1	UJ	1	R	1	U	20	J	19	J
Vinyl chloride	1	U	1	UJ	1	R	1	U	25	U	25	U
Xylene (total)	1	U	1	UJ	1	R	1	U	25	U	25	U

Appendix E-6
Summary of Groundwater Analytical Results
Target Compound List Semivolatile Organics

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14G00101		14G00201		14G00201		14G00301		14G00301		14G00302		14G00401		14G00401D	
Lab_ID	G7289002		G7289001		G7289001DL		G7063008		G7063008DL		G7769001		G7289003		G7289004	
Collection Date	4/6/95		4/6/95		4/6/95		3/10/95		3/10/95		6/8/95		4/6/95		4/6/95	
Semivolatile Organics, ug/L																
1,2,4-Trichlorobenzene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
1,2-Dichlorobenzene	1	U	1	U	1	R	1	U	NA		25	U	25	U	25	U
1,3-Dichlorobenzene	1	U	1	U	1	R	1	U	NA		25	U	25	U	25	U
1,4-Dichlorobenzene	1	U	1	U	1	R	1	U	NA		25	U	25	U	25	U
2,2'-oxybis(1-Chloropropane)	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2,4,5-Trichlorophenol	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
2,4,6-Trichlorophenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2,4-Dichlorophenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2,4-Dimethylphenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2,4-Dinitrophenol	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
2,4-Dinitrotoluene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2-Chloronaphthalene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2-Chlorophenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2-Methylnaphthalene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2-Methylphenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
2-Nitroaniline	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
2-Nitrophenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
3-Nitroaniline	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
4,6-Dinitro-2-methylphenol	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
4-Bromophenyl-phenylether	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
4-Chloro-3-methylphenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
4-Chloroaniline	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
4-Methylphenol	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
4-Nitroaniline	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
4-Nitrophenol	25	U	25	U	NA		25	U	NA		25	U	25	U	25	U
Acenaphthene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
Acenaphthylene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
Anthracene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
Benzo(a)anthracene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
Benzo(a)pyrene	0.02	U	0.02	U	NA		0.1	U	NA		0.02	U	0.02	U	0.02	U
Benzo(b)fluoranthene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U
Benzo(k)fluoranthene	10	U	10	U	NA		10	U	NA		10	U	10	U	10	U

Appendix E-6
Summary of Groundwater Analytical Results
Target Compound List Semivolatile Organics

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14G00101		14G00201			14G00301			14G00302		14G00401		14G00401D	
Lab_ID	G7289002		G7289001		G7289001DL	G7063008		G7063008DL	G7769001		G7289003		G7289004	
Collection Date	4/6/95		4/6/95		4/6/95	3/10/95		3/10/95	6/8/95		4/6/95		4/6/95	
bis(2-Chloroethoxy)methane	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
bis(2-Chloroethyl)ether	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	1	U	1	U	NA	51	R	33	D	1	U	1	U	1	U
Butylbenzylphthalate	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Carbazole	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Chrysene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Di-n-butylphthalate	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Di-n-octylphthalate	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Dibenz(a,h)anthracene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Dibenzofuran	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Diethylphthalate	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Dimethylphthalate	10	U	10	U	NA	10	U	NA	10	U	10	U	1	J
Fluoranthene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Fluorene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Hexachlorobenzene	1	U	1	U	NA	1	U	10	R	1	U	1	U	1	U
Hexachlorobutadiene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Hexachlorocyclopentadiene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Hexachloroethane	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Isophorone	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
N-Nitroso-di-n-propylamine	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
N-Nitrosodiphenylamine (1)	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Naphthalene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Nitrobenzene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Pentachlorophenol	1	U	1	U	NA	1	U	10	R	1	U	1	U	1	U
Phenanthrene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Phenol	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U
Pyrene	10	U	10	U	NA	10	U	NA	10	U	10	U	10	U

Appendix E-7
Summary of Groundwater Analytical Results
Target Compound List Pesticides and PCBs

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14G00101		14G00201		14G00301		14G00401		14G00401D	
Lab_ID	G7289002		G7289001		G7063008		G7289003		G7289004	
Collection Date	4/6/95		4/6/95		3/10/95		4/6/95		4/6/95	
Pesticides/PCBs, ug/L										
4,4'-DDD	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
4,4'-DDE	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
4,4'-DDT	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
Aldrin	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
alpha-BHC	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
alpha-Chlordane	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Aroclor-1016	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Aroclor-1221	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Aroclor-1232	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Aroclor-1242	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Aroclor-1248	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Aroclor-1254	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Aroclor-1260	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
beta-BHC	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
delta-BHC	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Dieldrin	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
Endosulfan I	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Endosulfan II	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
Endosulfan sulfate	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
Endrin	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
Endrin aldehyde	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
Endrin ketone	0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U
gamma-BHC (Lindane)	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
gamma-Chlordane	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Heptachlor	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Heptachlor epoxide	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Methoxychlor	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Toxaphene	5	U	5	U	5	UJ	5	U	5	U

Appendix E-8
Summary of Groundwater Analytical Results
Target Analyte List Metals and General Chemistry

Study Area 14
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	14G00101		14G00201		14G00301		14G00401		14G00401D	
Lab_ID	G7289002		G7289001		G7063008		G7289003		G7289004	
Collection Date	4/6/95		4/6/95		3/10/95		4/6/95		4/6/95	
Inorganics, ug/L										
Aluminum	105	B	81.6	B	109	U	143	B	121	B
Antimony	2.5	U	10.1	B	17.6		10.6	B	10.4	B
Arsenic	1.9	B	2	B	1.9	U	1.9	U	1.9	UJ
Barium	11.6	B	4.5	B	5.7	B	5.8	B	5.3	B
Beryllium	0.1	B	0.1	U	0.2	U	0.15	B	0.1	U
Cadmium	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
Calcium	37200		28100		95500		31600		31600	
Chromium	3.1	U	3.1	U	2.5	U	3.1	U	3.1	U
Cobalt	2.9	U	2.9	U	2	U	2.9	U	2.9	U
Copper	1.6	U	1.4	U	2.2	UJ	3.7	U	2.3	U
Iron	191		8	B	32.6	B	142		145	
Lead	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Magnesium	1280	B	2320	B	6740		2000	B	2020	B
Manganese	7.4	B	3.5	B	9.4	B	6.6	B	6.2	B
Mercury	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Nickel	14.2	U	14.2	U	9.6	U	14.2	U	14.2	U
Potassium	1900	B	922	B	884	B	2720	B	2760	B
Selenium	2.3	UJ	2.3	UJ	3.2	B	2.3	U	2.3	U
Silver	3.6	B	2.6	U	2.7	U	2.6	U	3.6	B
Sodium	1340	B	7370		8300		40500		41600	
Thallium	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	UJ
Vanadium	2.8	B	11.6	B	2.1	U	7.4	B	5.7	B
Zinc	1.7	B	24.4		1.9	B	2.3	B	1.4	B
General chemistry, mg/L										
Total Petroleum Hydrocarbons	1	U	1	U	1	U	1	U	1	U
Total Suspended Solids	1	U	1	U	1	U	1	U	NA	